

COLORADO STATE PUBLICATIONS LIBRARY
ED2.2/W19/1918 v.2 local
/A war-modified course of study for the



3 1799 00027 3458

WAR-MODIFIED COURSE OF STUDY

THE PUBLIC SCHOOLS OF COLORADO

THE DEPARTMENT OF PUBLIC INSTRUCTION
MARIA L. COCHRAN, SUPERINTENDENT

VOLUME II THE FIELDS OF EDUCATION



"My child should have the opportunity for
education because of the state."

— Abraham Lincoln

REVISION BY
MARY L. COCHRAN
AND LUCY BROWN, ASSISTANT
SUPERVISOR
DENVER

5-107.5
4:11:4-2 Copy 2

A WAR-MODIFIED COURSE OF STUDY

FOR
THE PUBLIC SCHOOLS
OF COLORADO

ISSUED BY
THE DEPARTMENT OF PUBLIC INSTRUCTION
MARY C. C. BRADFORD, Superintendent
1918

VOLUME II
THE TOOLS OF EDUCATION



***"No child should have less opportunity for
education because of the war"***

—Woodrow Wilson

PREPARED BY
MARY C. C. BRADFORD
AND CO-OPERATING EDUCATORS
1918
DENVER

NOTICE

Teachers of Colorado:

This volume is public property and is not to be removed from the district when you leave.

The State of Colorado provides these books, paying for them from the State School Fund. They are ordered by your County Superintendent for use by any teacher who may be in charge of the school where you are now teaching.

War service demands conservation of books and all other school material. Therefore, as a matter of honor and an obligation of patriotism, please regard this book as public property, not for personal ownership.

The examination questions issued by the State Department of Public Instruction, will be closely correlated with this course of study.

Mary C. C. Bradford.

State Superintendent of Public Instruction.

FOREWORD

Volume One of Colorado's War-Modified Course of Study is devoted to the Social Subjects. This Volume, Number Two in the series, deals with the Tools of Education:—what have been called the fundamentals of the structure of public school instruction.

As Volume One interpreted the Social Subjects of History, Civics, Patriotism, etc., in the light of recent world events, so the present volume endeavors to link subject matter to live experience at a great crisis in the history of the world.

Since the first volume appeared the Great War to End Wars has come to a triumphant conclusion. Peace has been won from under the shadow of victorious swords, and civilization has vindicated its right to a permanent existence. Nevertheless, the title "War-Modified Course of Study" belongs of right to each volume of this series, the changes that have been wrought in the living and thinking of the people by the great struggle, "carrying on" into the near and even remote future. Therefore, the plan adopted when the issuance of this new Course of Study was undertaken, will be followed throughout.

The following well-known experts in their several lines are the co-operating educators in the production of this volume:

F. B. Pearson, Superintendent of Public Instruction of the
State of Ohio.

Helen R. Gumlick,

Martha W. Dorsey,

Eleanor Davidson,

M. E. Eagleton, all of Colorado.

The Spelling and Penmanship are from the 1916 Course of Study.

The Department of Public Instruction is proud to submit the work of these skillful educators to the teachers of Colorado. It feels that it thereby renders a service of worth to the schools of the State.

Mary C. C. Bradford.

State Superintendent of Public Instruction.

INDEX

	PAGE
Democracy	5
Reading	7
Spelling	20
Penmanship	37
Language and Grammar	52
Autocracy vs. Democracy	60
Arithmetic	63

DEMOCRACY

Democracy is commonly thought of as a form of government, but primarily it is not this at all; rather it is a spiritual attitude. "As a man thinketh in his heart, so is he." The form of government is an outward manifestation of an inward feeling, but the feeling necessarily precedes and conditions the outward form. If people all have the feeling of democracy, a democratic form of government is inevitable. The great task before the homes and the schools, therefore, is to generate this feeling, and now is a most opportune time for this important work. People are more neighborly and more kindly disposed toward one another than ever before. The old lines are being broken down and people are coming to think that, in a large way, each one is his brother's keeper. We are coming to estimate people by what they are and what they can do, rather than by what they have, and this is making for a higher plane of sympathy and good will. The teacher does well, therefore, to inquire how she may best use the studies of the school to generate the feeling of democracy, so that when the boys and girls emerge from their school life, democracy will be so thoroughly enmeshed in their consciousness that it will be as much a part of them as their breathing. Hence no teacher ever needs to apologize for saying that she is teaching Democracy by means of History, Geography, Grammar, and Civics.

F. B. PEARSON,

State Superintendent of Public Instruction, Columbus, Ohio.



Digitized by the Internet Archive
in 2015

READING

HELEN R. GUNLICK, DENVER SCHOOLS

Reading is getting thought and feeling from the printed page as accurately and completely as possible. Reading involves imaging, thinking, interpreting, and feeling.

I. MOTIVES FOR READING.

1. For pleasure, through literature.
2. For knowledge, through text-books and references.
3. For news, through newspapers, magazines, etc.

II. AIMS IN TEACHING.

1. To foster the love of reading in the child.
2. To provide a tool for the future acquisition of knowledge.
3. To make thoughtful, fluent, expressive, independent, and rapid readers.
4. To direct the child's reading until his taste for the right kind is so established that he may choose for himself.
5. To train voice to a musical, sympathetic organ of expression.

III. KINDS OF READING.

1. Silent.

- a. Silent reading is so important to the child's future development that he should receive specific training in it.
- b. The time allotted to silent reading should increase through the grades.
- c. Through silent reading the ambitious child gets to read more than the class, this acts as an incentive to the slow child.
- d. Plan and assign silent reading lessons carefully.
- e. Use questions which the child must answer through his reading.
- f. Require oral and written reports regularly.
- g. Use the material in other school texts for this reading to show the advantages to the child.

2. Oral reading.

- a. Of necessity oral reading receives more emphasis than silent reading in the primary grades.
- b. Oral reading has a place in every grade.

- c. As thought-getting must precede thought-giving every selection should be read silently before it is read orally.
- d. Do not hold rapid readers to keeping the place while slow readers struggle through a selection. This leads to bad habits.
- e. Emphasize enunciation, articulation, pronunciation, inflection in every grade.
- f. Stress good standing position and proper handling of books.
- g. Aids to good expression.
 - (1) Natural expression usually follows a clear understanding of the thought and feeling in a selection. These should be brought out by skillful questions.
 - (2) A mastery of the mechanics is necessary.
 - (3) Train the child to glance ahead.
 - (4) Train to read words in their natural groups, not isolated.
 - (5) Make use of dramatization throughout the grades.
 - (6) Read much to the children, both from the texts they use and from outside books. Sometimes have the books before the child while reading. Read well.

3. Intensive.

Pupils are required to explain words, passages, synonyms, etc.

4. Extensive.

The main purpose of this reading is practice and fluency. The reading proceeds with few interruptions. The material is to be easier than that used for intensive reading. Thoroughness is the end in intensive reading, spirit is the word in extensive reading. Teachers should observe the difference between these two kinds and, while using both, preserve the proper balance.

IV. OUTSIDE READING.

1. Necessity.

The crowded program does not allow as much time as is desired for reading in school, so teachers must encourage outside reading in all grades.

2. Materials.

- a. Have library shelf or table in each room.
- b. Attractive books suited to the maturity and varying interests of the children.
- c. Make use of any public or private library to which you have access.
- d. Secure graded lists of books from public libraries.

3. Ways of interesting in outside reading.

- a. Have the children keep individual records of the books they read. Such a list should follow them through the grades, being added to each year.
- b. Give definite recognition and credit for approved outside reading.
- c. Read or tell parts of interesting stories; then leave the books where the children can get them.
- d. Co-operate with parents in selecting books and magazines for children.
- e. Encourage the children to report interesting books to their class. The following is a good outline for such a report:
 - (1) Title.
 - (2) Author.
 - (a) Name, home, interesting facts about his childhood, home, etc.
 - (b) Names of some other works.
 - (3) Setting.
 - (a) Where scene is laid.
 - (b) Is it a story of the city, country, etc.?
 - (4) Characters.
 - (a) Animals or people.
 - (b) Names.
 - (c) Favorite character and why?

(5) Story.

- (a) Adventure, fahey, or every-day.
- (b) Give general idea or tell some incidents.
- (c) Does the child like it and why?
- (d) Does the child recommend it?

FIRST GRADE**I. AIMS.**

Same as stated above. The first grade child has a large speaking vocabulary. The teacher must build up a written and printed vocabulary corresponding to his speaking vocabulary. The first reading lessons must be within and should grow out of his experiences.

II. SOURCES OF MATERIALS FOR FIRST READING.

- 1. Conversation about home, pets, toys, plays, nature study, immediate interests.
- 2. Primers and readers.
- 3. Let the children make their own reading lessons.
- 4. Bring in suitable signs, posters, Sunday supplements of papers, Sunday School papers, books from home, etc.

III. METHOD.

- 1. Keep the two sides of reading constantly in mind, namely, the thought and the mechanics. The thought must come first, even in beginning reading.
- 2. The best primary teachers favor the analytic method for beginners. This method presents the whole thought to the child in a rhyme or a story. The rhyme or story is analyzed into sentences or lines, these into phrases or groups of words, and finally the words into the sounds and names of the letters. The sentence is the simplest form in which thought is expressed, therefore the child should learn to read in sentences from the first. First sentences should always be woven into a real story.
- 3. The first reading should be done from prepared charts or from the blackboard, with the children grouped around the teacher. Use either print or script. If script is used conform to the forms of the letters which the children will be required to learn. With either print or script observe good spacing between words and lines.

4. No time for taking books can be definitely fixed. It is a good plan to allow the children to take the books as soon as they can readily read the first page. This keeps up interest.
5. Make good use of the pictures in the books as suggestive of the story to be read.
6. Begin silent reading by writing upon the board.
 - a. Commands as, Rise, Sit, etc.
 - b. Directions for games, construction work, passing materials, etc.
7. Drills, apart from the reading lesson.
 - a. Word drill.
 - (1) Give daily drill upon words that must become automatic.
 - (2) Make drills quick, short, varied.
 - (3) In first and second grades word drills upon new words should follow the reading lesson.
 - (4) Train the child to get words through the context.
 - b. Phonics.
 - (1) Begin phonics, apart from the reading lesson, soon after the child enters school.
 - (2) Phonetic training involves ear, eye, and voice training. Keep this clearly in mind and provide exercises for each.
 - (3) Get the separate sounds from words they know, as *r* from run.
 - (4) The blend, that is sensing the word from the separate sounds, is difficult for most children, therefore requires careful teaching and much practice.
 - (5) Be sure you know how to make the sounds correctly, then see that the children do so.
 - (6) Concert work has a place, but most time should be given to individual work.
 - (7) As soon as the child has sufficient phonetic ability to get a new word in his reading lesson, lead him to use it. Never tell a word he can get. This is a slow step, but most important. Do not neglect it.

- (8) Diacritical marks are not necessary until the child is ready for the dictionary. Letter combinations, not marks, are in general the factors that determine pronunciation.
- (9) Every primary teacher should own and use one such manual as follows. They contain many valuable suggestions for word and phonetic drills and seat work in relation to reading. They are adaptable to any text.

Story Hour Readers' Manual, Coe and Christie.
American Book Co.

A Teacher's Manual, Young and Field. Ginn
& Co.

Primary Manual, Reading Literature Readers,
Roe. Peterson & Co.

The Progressive Road to Reading, Plan of Work.
Silver, Burdett & Co.

Five Messages to Primary Teachers.

IV. MINIMUM REQUIREMENTS.

1. First half year.

- a. Vocabulary of 150 words, including such fundamental words as:
I, was, sing, the, he, her, see, am, come, a, they, his, can, run, go, in, this, want, like, fly, big, you, that, where, have, play, little, my, there, has, is, to, pretty, she, then.
- b. Read one primer as a text and another, or its equivalent, as supplementary.
- c. Phonics.
 - (1) All the common consonant sounds, including such combinations as *sh*, *ch*, *th*, *wh*, *ng*, *ck*, and *nk*. Drill upon *br*, *cl*, *str*, *spr*, etc., together.
 - (2) All the short vowel sounds.
 - (3) The long vowel sounds made so by the final *e*:
made, *late*.
 - (4) Blending words with these sounds, as *s at* = *sat*, or *ge t* = *get*.

2. Second half year.
 - a. Read two first readers or the equivalent.
 - b. Phonics.
 - (1) Vowel digraphs: *ee, ea, ai, oa, ie, ay.*
 - (2) Combinations: *ow, ou, oy, ar, all, ight.*
 - (3) Children should be able to get any simple word through the blend.

The test of the first year's work in reading is not the number of books read, but the joy and ease with which the child attacks new material.

V. USEFUL MATERIALS FOR PRIMARY READING.

1. Set of perception cards containing words large enough to be seen across the room.
2. A set of phonetic cards upon which are printed the letters and phonograms to be taught in large type.
3. Pictures illustrating nouns, verbs, etc. These may be secured from the backs of current magazines. If labeled and placed before the children their vocabularies will be quickly enlarged.

VI. A LIST OF GOOD PRIMERS AND FIRST READERS.

Free and Treadwell, Reading Literature.

The Story Hour Primer and First Reader.

Progressive Road to Reading, Book One.

Riverside Primer.

Literary Readers, Book I, Young and Field.

Merrill Primer.

Beacon First Reader. Ginn & Co.

Kendall Primer. D. C. Heath & Co.

Busy Brownies at Work.

Blodgett Primer and First Reader.

Little Black Sambo, Bannerman. Reilly & Britton Co.

Children's Classics in Dramatic Form. Houghton, Mifflin & Co.

SECOND GRADE

Become familiar with the first-grade course.

Pupils should have sufficient power over words and phonics to do some independent study.

The work will still be largely oral, but silent reading will receive increased attention.

Direct and encourage outside reading.

Urge reasonable speed.

Give special attention to the children who are abnormally slow.

Emphasize good reading habits in enunciation, articulation, pronounciation and inflection, bodily position, book, etc.

I. DRILL.

1. No child can be a thoughtful or rapid reader who does not know words.

a. Drill daily upon fundamental words which give trouble.

b. Drill upon natural groups of words rather than upon single words, as:

The little girl, to play, there were, this is, etc.

e. Insist more and more upon child getting words from the context.

2. Phonics.

a. Review thoroughly the first-grade work.

b. Give daily drills of increasing difficulty.

c. At the end of the second grade the child should be able to sound nearly every word he finds in his reading lessons.

d. Have the children formulate from their experience such rules as:

(1) The final *e* usually makes the preceeding vowel long.

(2) *Ck* follows a short vowel, while only *k* follows a long vowel. Example, *rock*, *spoke*.

(3) *C* and *g* have the soft sound when followed by *e*, *i*, or *y*.

e. Teach common prefixes and suffixes.

f. Begin learning the alphabet in order.

g. Lay foundation for dictionary work by having the children arrange words alphabetically, calling attention to like initial sounds. Example, *ba*, *be*, *ab*, *ac*, etc.

II. MINIMUM REQUIREMENT.

1. Read at least four second readers, two as texts and two or their equivalent as supplementary.

2. Phonics.

Master the following: *er, ir, ur, ar, aw, an, tion, kn, gn, ph, ew, eu, in, other, wr, ook, oon, oi, oe, qu.*

III. SUITABLE BOOKS FOR SECOND GRADE.

Little Playmates.

Reading Literature, Second Reader.

Progressive Road to Reading, Book II.

Beacon, Second. Ginn & Co.

Riverside, Second.

Short Stories for Little Folks. Newson & Co.

Story Hour Reader, Book II.

Work-a-Day Doings.

Baldwin and Bender, Second Reader.

Blodgett, Second Reader.

Boy Blue and His Friends. Little, Brown & Co.

Robinson Crusoe. Educational Publishing Co.

THIRD GRADE

Become familiar with the courses of the grades below.

By this time most of the mechanics of reading have been taught, but not mastered, hence the need of wise handling by the teacher to keep up fresh interest through new kinds of work and material adapted to the children.

Begin the use of the materials in other school subjects for some of the reading as a training in study.

Increase the time for and training in silent reading.

Speed up any laggards, but not at the expense of the class.

Gratify varying tastes in reading.

Give the children some of the standardized tests, demonstrating the value of such tests.

Encourage the children to time their own reading and keep record of tests.

I. DRILLS.

1. Continue daily drill upon troublesome words or combinations of words.

Train to read several words at a glance.

2. Phonics.

- a. Review thoroughly preceding work.
- b. Do not tell children words.
- c. Teach any phonetic principles not taught before.
These will be mainly exceptions to rules.
- d. Continue to make rules that apply in pronunciation and spelling.
- e. Continue making dictionary lists and toward the end of the year put the dictionary into the hands of the children.
- f. Teach diacritical marks.
- g. Learn the alphabet in order.

II. MINIMUM REQUIREMENTS.

1. One basic reader and two supplementary readers or their equivalent.

III. SUITABLE BOOKS.

Beacon, Third.

Aldine, Third.

Blodgett, Third.

Baldwin and Bender, Third.

Little Folks of Many Lands. Ginn & Co.

Legends of the Red Children.

Doreas, the Indian Boy. D. C. Heath.

Early Cave Men, Dopp.

Nature Myths, Holbrook.

Seven Little Sisters, Andrews.

Stories of Colonial Children, M. L. Pratt.

Reading Literature, Third Reader.

Japanese Fairy Tales. Rand & McNally.

FOURTH GRADE

Become familiar with the courses below.

Most children will have mastered the mechanics of reading by the end of the fourth grade and be able to read easily any well-adapted material.

Slow pupils must receive attention, but not at the sacrifice of the class.

I. DRILL.

1. Continue drills upon difficult words. Insist upon the application of phonetic knowledge.
2. Training to read words in groups.
3. Practice silent reading.
4. Use frequently the texts of other school subjects as training in study.
5. Emphasize enunciation, articulation, pronunciation, and inflection.
6. Cultivate the dictionary habit. Demonstrate the variety of information it contains.

II. MINIMUM REQUIREMENTS.

1. One fourth reader as a text and two others, or the equivalent, as supplementary.
2. NOTE: Lead children to like reading. Present all selections as wholes first. Urge the use of the library when possible.

Allow the children some choice in their reading materials, thus gaining an insight into the tendencies and interests of the class.

Do not neglect reading to the children and talking of interesting books.

SUITABLE BOOKS FOR FOURTH GRADE.

Baldwin and Bender, Fourth. Silver, Burdett & Co.

Blodgett, Book IV.

Stories of American Life and Adventure. Eggleston & Co.

The Little Lame Prince. A. Flannigan & Co.

Later Cave Men, Dopp.

Myths of the Red Children. Ginn & Co.

Good Health, Gulick.

Reading Literature, Fourth Reader.

Fairy Stories, Andersen. Ginn & Co.

Fifty Famous Stories. American Book Co.

The Seven Little Sisters, Jane Andrews. Ginn & Co.

The Story Hour, Kate Douglas Wiggin.

Roberts' Animal Stories. The Page Publishers.

Goody Two Shoes. D. C. Heath.

FIFTH AND SIXTH GRADES

Become familiar with courses below.

I. DRILLS.

1. Children should have mastered the mechanics of reading.
If necessary give drills as suggested for grades below.
2. Establish the dictionary habit.

II. DESIRED RESULTS OF READING LESSONS.

1. Ability to study independently, due to training in silent reading.
2. Pupils using leisure time for reading.
3. Pupils showing individual preferences.
4. Growth in appreciation of good literature.
5. Ability to enter into the thought and feeling of selection.
6. Encourage constructive criticism on the part of the pupils.
Most important.

NOTE: Do not do too much intensive reading. Rereading is not always necessary or desirable. Children should always read the entire selection silently before attempting oral reading.

III. SUITABLE BOOKS.**FIFTH GRADE**

Blodgett, Book V.

Black Beauty. Educational Publishing Co.

Baldwin and Bender, Fifth. Silver, Burdett & Co.

Moni, the Goat Boy. Ginn & Co.

Stories of Our Country. American Book Co.

The Stories Without an End. D. C. Heath.

Early Sea People, Dopps. Rand & McNally.

Emergencies, Gulick.

Geographical Readers, Carpenter.

David Copperfield and Oliver Twist. American Book Co.

SIXTH GRADE

Baldwin and Bender, Sixth. Silver, Burdett & Co.

Blodgett, Book VI.

Thirteen Colonies, Guerber.

Favorite Greek Myths. D. C. Heath.

The Heart of a Boy. Rand & McNally.

Heidi, Spyri.

How the World Is Fed. American Book Co.

Town and City, Gulick.

Geographical Readers, Carpenter.

Abraham Lincoln, Moore.

Teachers will find much reading material which will be valuable in the following magazines:

Youth's Companion.

Boy's World.

National Geographic Magazine.

Popular Mechanics.

American Boy.

Story Tellers' Magazine.

Country Gentleman.

Red Cross.

Current History.

Current Events.

St. Nicholas.

Literary Digest.

BOOKS FOR TEACHERS' READING.

Gessell, The Normal Child and Primary Education.

Klapper, Teaching Children to Read.

Chubb, The Teaching of English.

Briggs and Coffman, Reading in the Public Schools.

Carpenter, Baker and Scott, The Teaching of English in Elementary and Secondary Schools.

Charters, Teaching the Common Branches.

Huey, The Psychology and Pedagogy of Reading.

McMurry, A Special Method in Reading.

For courses of study for seventh and eighth grades see Course of Study for Junior High School.

SPELLING

TAKEN FROM COLORADO COURSE OF STUDY FOR 1916

Since upon a knowledge of words and the ready recognition of them depends the acquisition of information in all lines, it is very important that definitely planned, thorough work in this subject be done *every day*. For this reason we recommend that the teacher, at least, shall have a *good spelling book*. It not only offers systematic work, but is also a great time-saver.

From the first grade up special attention must be given to *sounds and values of letters*, to *syllabication*, to *correct pronunciation*, to *word-building* and *word-analysis*, the latter starting in the first grade with the blending of sounds into words and word-families, and continuing through the upper grades with the study of roots, prefixes and suffixes, in the derivation of words.

Always select words whose meaning is or can be brought within the child's experience.

Insist on exact pronunciation and clear articulation. Call into use the eye, the ear, the hand, and the voice.

When words are placed upon the board for children to spell, write them as *units*, as they will be afterwards. Indicate syllables, if desired, by a slight, unobtrusive mark.

Require words to be spelled by syllables, occasionally pronouncing syllables.

In all lessons, spell, incidentally, difficult words which are important.

Let the spelling lessons, as far as possible, correlate with the other lessons, not losing sight of a definite central idea in the *spelling plan*. The spelling lesson should very decidedly build to the reading lesson.

FIRST YEAR

After the phonograms used in the first family have been learned, begin the formal work in spelling. Take up ten words a week, repeating the drill from day to day, adding something each day, as suggested below. Thus, aside from the sight-words learned in the reading lesson, forty new words are learned and spelled every month by the use of the word-families. We give below a suggestion as to the method of procedure.

First Day. Teach by the blending or synthetic method the *an* family, telling a little story to connect them, as:

"Today we are going to learn about a family whose name is *an*.

Your family name is Smith and yours is Brown, and this family name is *an*. *An* is the father. There are several children in this family. One is named *c-an, can*; then there is *N-an, Nan*; *D-an, Dan*; *p-an, pan*; *f-an, fan*; *r-an, ran*; *m-an, man*; *t-an, tan*; *v-an van*."

Give only the *sounds*, not names of letters.

Drill thoroughly on the pronunciation of the sounds and words and their recognition, repeatedly changing the order. Use this work in seat-work and in games for the day. For seat-work, let pupils build words of this family on their desks, as they see them on the board, whispering the sounds and words as they place them. For games we suggest:

CROSSING THE BROOK.—The words are placed on cards at irregular intervals on the floor. The child steps over each, calling its name and taking the card. If he fails to call a word correctly, he has wet his feet and must go back, letting someone else try.

FISHING GAME.—Place word-cards on the floor in the center of a circle formed by the children. Let them point in turn to a word, calling its name and taking the card if the word is called correctly. The one who catches the most fish wins the game.

WORD GAME.—"Who wants to be *m*?" (Giving the sound.) Choose a child. Let him take his place in the front, holding up a card with this sound on it. "Who wants to be *a*?" "Who wants to be *n*?" After they are all placed, each in order tells his name. Why, what word does that make? Then children guess the word.

Second Day. Drill again on pronunciation and sounding of the same words. Copy them on the board for each child of the class, letting him trace over the letters with the crayon, sounding to himself as he does so. For seat-work, let him trace over the same words written large on cards, or written with wet crayon on the desk. He may trace with seeds, coffee, or pencil.

Third Day. Drill on the same words for pronunciation and sounding. Spell them from the board with the children. Review seat-work and games and board-work, bringing in the *spelling* now.

Fourth Day. Drill on sounding, pronunciation, and spelling. Have pupils copy on board and spell to themselves as they write. Continue seat-work and games bearing on these words.

Fifth Day. Use pictures, actions, and other suggestions for the words, and require children to spell from memory.

On this day do board-work and seat-work from memory.

Second Week. Take up another very simple family as, for instance, the *at* family. However, this may be determined largely by the manual followed in the reading lesson.

a-t, at

b-at, bat

f-at, fat

h-at, hat

m-at, mat

N-at, Nat

p-at, pat

r-at, rat

s-at, sat

v-at, vat

Review previous words, a very few at a time.

Third Week. From now on take up a new family each week, reviewing frequently. Keep a list of words taken, so that in the second year's work unnecessary repetitions may be avoided.

SECOND YEAR

Continue teaching ten words a week, as in the first grade, using the more difficult phonograms arising in the second-grade reading lessons arranged by the course of study. Review frequently.

THIRD YEAR

From now on a spelling book is of great value. Begin a systematic course of training in diacritical markings, taking them up very simply and attractively by using poetry whenever it is available, showing how these various sounds give beauty to the lines. (The "Guilford Speller" is particularly good for this work; also Rand, McNally's "Speller and Word Book.") Take long and short vowels first.

Take words grouped around a common interest, whether of sound or meaning.

Continue word-building and *sounding*.

Teach syllabication.

Teach the application of common prefixes and suffixes, as, *re, un, mis, less, er, ed, let*.

Teach simple synonyms and antonyms.

Take five words a day the first half of the year, increasing to ten in the latter half. Use words within the child's understanding. Have oral and written spelling every day.

TESTS.—Give pupils a picture; let them write all the words which the picture suggests to them.

Given a word, let pupils make as many words from it as they can. Make these competitive games.

FOURTH YEAR

Continue systematic drill on *all phonic facts* learned in previous grades.

Drill on diacritical markings, taking only one sound to a lesson.

Drill on syllabication and accent. Without giving names, take monosyllables, dissyllables and trisyllables.

Review previous prefixes and suffixes, adding *in, ab, ad, en, ful, like, ly, some*. Use them in word-building and word-analysis.

Take more difficult work in antonyms and synonyms. Here a good speller gives information as to the best selection to be made.

Teach homonyms—as *bare, bear*, etc.—correlating spelling with language lessons. Begin the teaching of the few rules which a child should know, as:

a. The effect of final silent *e* on the vowel directly preceding the consonant which it follows, as *rate, mute*, etc.

b. Effect of doubling a letter.

c. Dropping final *e* before a syllable beginning with a vowel, as in *liking, likable*, etc.

Take ten words a day, reviewing on Friday.

FIFTH AND SIXTH YEARS

Continue drill in sounding, syllabication, accent, word-analysis, and word-building.

Review previous prefixes and suffixes learned. Teach the names: *roots, prefixes and suffixes*; also *monosyllables, dissyllables, trisyllables* and *polysyllables*.

Review the prefixes and suffixes learned, and add to them *semi, circum, con* or *cum, pre, e* or *ex, able, ant, or, ion*, and similar ones.

Repeat work in diacritical markings, using poetry for teaching the sounds.

Review previous synonyms, antonyms, and homonyms, adding to them from the spelling and language book used.

Review rules learned and add:

- a. Rules for doubling a letter. (See Sixth and Eighth Years.)
- b. Changing of *y* to *i*.
- c. *c* and *g* soft before *e*, *i* and *y*.
- d. *c* and *g* hard before *a* and *o*.

SEVENTH AND EIGHTH YEARS

Devote some time to a brief history of the English language, leading to an appreciation of the force of the Anglo-Saxon, Latin and Greek words, as well as those arising from other sources. This can be done in the language lessons with a great saving of time.

Continue a consistent study of diacritical markings, syllabication and accent.

Continue sounding words. Even in the eighth grade pupils will be found whose knowledge of the sounds and values of letters is deficient; moreover, the sounding of words in the spelling lessons will very greatly improve *pronunciation and articulation* in the reading lessons.

Word-building and word-analysis may be carried to a very interesting extent in these grades, especially after some work has been done in the history of the language. New roots, prefixes and suffixes may be learned as being Anglo-Saxon, Latin, Greek, etc., and words may be built or analyzed in view of this knowledge. Words grow in significance; words never seen before are pronounced and interpreted without difficulty; the choice of words in speaking and writing is more apt; and thus efficiency in spelling is greatly increased.

Homonyms, antonyms, synonyms and words whose meaning centers around a common interest are reviewed from previous grades, and others added requiring greater maturity of understanding.

When studying sounds and diacritical markings of letters, it is well to adapt words from other lessons. Work on one or two sounds only in one lesson. Take ten or twenty words a day (as the situation warrants), and review Friday; but take spelling and word-study systematically every day.

Before leaving these grades, the pupils should by the *inductive* method become master of the few simple rules which have a wide bearing on spelling, as:

- a. Singular nouns ending in *y* preceded by a consonant, change *y* to *i* and add *es* to form plural.

b. Singular nouns ending in *y* preceded by a vowel, form the plural by adding *s* to the singular.

c. Words ending in silent *e*, drop the *e* before taking on a new syllable beginning with a vowel; as, *cultivate*, *cultivator*; unless it be necessary to retain the *e* to keep the sound of the preceding consonant, as in *changeable*, or to retain the character of the word, as in *hoe*, *hoeing*.

d. Words ending in a silent *e* retain the *e* when taking on a syllable beginning with a consonant; as *move*, *movement*.

e. In monosyllables and words accented on the last syllable, a final consonant preceded by a single vowel is doubled before a suffix beginning with a vowel; as, *run*, *running*; *occur*, *occurring*.

f. The preceding rule does not apply when the word ends with a double consonant, or when the consonant is preceded by two vowels, as *weak*, *weaken*.

Teach vowels, consonants, digraphs, diphthongs, triphthongs, and the use of equivalent letters.

See that the pupils can spell, pronounce and abbreviate properly the names of all the United States; see also that they can spell the counties and cities of Colorado.

See that the pupils spell and pronounce properly all the names on the following list of war names:

HOW TO PRONOUNCE THE WAR NAMES.

TAKEN FROM NEW YORK EVENING MAIL

The pronunciations of French and Italian names given below do not pretend to be more than approximations. It is quite impossible to find combinations of letters which will suggest to the ear of English speakers the exact Latin sounds. It must also be remembered that the pronunciations of place names often vary, even in the original language.

But, on the whole, the attempt made below should be found useful to those who want to avoid the more glaring errors of those who give straight English sounds to the French or Italian syllables. The Evening Mail hopes that in this way the list will serve a useful purpose.

GENERALS

<i>Name.</i>	<i>Pronunciation.</i>
Castelnau	Cas-telno
De Goutte	du Goot
Foch	Fush
Guillomat	Gee-oh-ma (G hard)

<i>Name.</i>	<i>Pronunciation.</i>
Humbert	Um-bare
Joffre	Zhoff
Mangin	Mong-ja
Manoury	Man-oor-ee
Nivelle	Nee-vell
Pétain	Pet-an
Sarrail	Sarrah-eel

PUBLIC MEN

Caillaux	Ca-yo
Clemenceau	Clay-mong-so
Herve	Er-vay
Longuet	Lohng-ay
Malvy	Mal-vee
Poincaré	Pwan-caray
Thomas	Toh-ma

NEWSPAPERS

Le Temps	Le Tong
Le Journal des Débats	Le Zhoornal day Daybah
Le Matin	Le Matan
Le Petit Journal	Le Ptee Zhoornal

TERMS

Bourgeoisie	Boor-zhwas-ee
Communiqué	Comm-un-eekay
Camouflage	Cam-u-flazh

RIVERS

Aisne	Ain
Aube	Ohb
Ancre	Ank
Aronde	Ar-ohnde
Marne	Marn
Oise	Was
Oureq	Oork
Seine	Sane
Somme	Sum
Lys	Lease
Vesle	Vale
Yser	Eeser

TOWNS, ETC.

Amiens	Am-yan
Apremont	Ap-remonhgn

<i>Name.</i>	<i>Pronunciation.</i>
Armentieres	Armon-tee-air
Arras	Ar-ass
Asnieres	Ass-neeair
Auberive	O-bereave
Achiet-le-grand	Ashyay-le-grong
Auchy	O-she
Auber	Obay
Ablain	Ab-lan
Ablainzeville	Ablanz-veel
Ailly-sur-Noye	Ah-yeel-sur-nwa
Arleux	Ar-luh
Aubigny	O-binyee
Albert	Al-bare
Ayette	Ah-yet
Aveluy	Av-lwee
Ancervillers	Onser-veeyay
Antheuil	An-tuh-eel
Ambleny	Om-blenee
Aubercourt	Obey-coor
Aiguizy	Ay-gweezee
Aubilly	O-beeyee
Anizy	An-easy
Azannes	Az-an
Avricourt	Av-ricoor
Altigny	At-inyee
Aulnoye	Ohl-nwa
Arlon	Ar-long
Aubenton	O-ban-tohng
Bailleul	Bah-yul
Bailly	Bah-yeel
Bapaume	Bah-pome
Basozches	Ba-zosh
Beaumont	Bo-mohng
Belfort	Bel-fore
Bethune	Be-tune
Blerancourt	Bleran-coor
Bologne	Bo-lunye
Braye	Brah-ee
Bussieres	Buss-yair
Bouresches	Boo-resh
Brouillet	Broo-yay

<i>Name.</i>	<i>Pronunciation.</i>
Bruges	Bruzh
Bertincourt	Bertan-coor
Boisleux	Bwah-luh
Beauvraignes	Bo-vrain
Bozanne	Buz-an
Bazancourt	Baz-ancoor
Bordeaux	Bor-doh
Bienvillers	Beean-veeyay
Bonnay	Bon-ay
Bucquoy	Bu-kwah
Belloy	Bell-wah
Braisne	Brah-in
Bligny	Blin-ye
Brecy	Bre-see
Bois-des-Loges	Bwah-day-luzh
Blamont	Bla-mohng
Besancon	Bez-an-sohng
Bruyeres	Bru-yair
Baccarat	Bak-arah
Bar-le-Duc	Bar-ledook
Bouillon	Boo-yohng
Bertrix	Bertreeee
Bohan	Bo-an
Carvin	Car-van
Cambrai	Kom-bray
Carlepont	Kar-le-pohng
Chalons-sur-Marne	Shalohng-sur-marn
Chambley	Shom-blee
Champagne	Shom-pahn
Chantilly	Shon-tee-ye
Charleville	Shar-le-veel
Chateau-Thierry	Shato-tee-ery
Chaulnes	Shown
Civy-Salsogne	Seevee-salsunye
Coulonges	Coo-lonzh
Champigny	Sham-pinyee
Chamery	Sha-mer-ee
Cierges	See-erzh
Courmont	Coor-mong
Courpoil	Coor-pwol
Chauny	Show-nee

<i>Name.</i>	<i>Pronunciation.</i>
Chezy-sur-Marne	Chezee-sur-marn
Cirey	See-ree
Combles	Kohmbl
Compiègne	Kohn-pee-ain
Coucy-le-chateau	Coosee-le-shato
Crepy	Cre-pee
Cuvilly	Cu-veeyee
Charleroi	Shar-le-rwah
Courtrai	Coor-tray
Chambrettes	Shom-bret
Champlat-Bligny	Shon-pla-blinyee
Croix Ricard	Krwah-rik-ahr
Courcelles	Koor-sell
Chevrincourt	Shevran-coor
Cutry	Kutree
Cuvilly	Ku-veeyee
Crise	Kree-se
Courpoil	Koor-pwol
Charmel	Shar-mel
Cantigny	Kon-teenyee
Chemin-des-Dames	Shman-day-dam
Clery	Clay-ree
Corbie	Cor-bee
Caestre	Ca-est
Cambrin	Com-bran
Courrieres	Coo-reeair
Croiselles	Crwah-sell
Clermont	Clare-mohng
Creil	Cray-eel
Coeuvre	Cuv
Calais	Cal-ay
Cherbourg	Sher-boor
Commercy	Kom-ersee
Challerange	Shal-eronzh
Charleville	Shar-level
Carignan	Car-inyan
Dixmunde	Dease-munde
Dommières	Domeeay
Douaumont	Do-oh-mohng
Dijon	Dee-zhohng
Domremy	Dong-raymee

<i>Name.</i>	<i>Pronunciation.</i>
Dormans	Dor-mongse
Doullens	Do-longse
Dunquerque	Dun-kerke
Dieppe	Dee-ep
Drocourt	Dro-coor
Dravigny	Dra-vinyee
Dieuze	Dee-uzh
Dinant	Dee-nong
Epagny	Ay-panyee
Epehy	Eh-pah-yee
Epernay	Aypernay
Estaires	Estair
Estrees St. Denis	Esstray-san-denee
Etampes	Ai-tonp
Ecurie	Ay-curee
Epieds	Epyay
Etain	Ay-tan
Epinal	Ep-ee-nal
Ferme-des-Loges	Ferm-day-Luzh
Fresnoy	Fren-wah
Ferfay	Fer-fahee
Fere-Champenoise	Fair-Shong-pen-was
Fere-en-Tardenois	Fair-ong-tardenwah
Fismes	Feem
Fleury	Flur-ee
Flirey	Flir-ee
Fontainebleau	Fonc-tan-blow
Francilly	Frahn-sillee
Franvilliers	Fran-veeyay
Fromentieres	Fro-mong-teeair
Faverolles	Fav-rull
Festubert	Fest-ubair
Fontenoy	Fone-tenwah
Foucaucourt	Foo-koh-coor
Framerville	Framay-veel
Fouquescourt	Fook-escoor
Fresnes	Frane
Flanders	Flanders
Gouzeaucourt	Goozo-coor (G hard)
Guiscard	Giss-car (G hard)
Gricourt	Gri-coor (G hard)

<i>Name.</i>	<i>Pronunciation.</i>
Guillaucourt	Gee-ohcoor (G hard)
Genlis	Zhong-lease
Gimors	Zhee-morse
Gerechamp	Ger-shong (G hard)
Grivillers	Gri-veeyay
Gravelotte	Grahve-lutteh
Harbonnieres	Ar-bonyar
Houdain	Oo-dan
Hamel	Am-cl
Hazebrouck	Az-bruk
Hebuterne	Ebu-tern
Hangard	Ang-aar
Hailles	Ah-yeel
Hautebraye	Oat-brahyee
Hartennes	Ar-ten
Hinges	Anzh
Hericourt	Ayr-icoor
Jaulgonne	Zhohl-gun
Jonchery	Zhon-sheree
Le Catelet	Le Catlay
Laventie	Lavong-tee
Lassigny	Lass-inyee
Liancourt	Lean-coor
Locon	Lo-kohng
Loere	Loke
La Bassee	La Bassay
La Ferte Milon	Lafert-meelohng
Lens	Longse
Le Thillot	Le-tee-yoh
Laversine	La-ver-seerr
Le Ployron	Le-plwah-rohng
Le Thiolet	Le-tee-olay
Liege	Lee-ayzh
Ligny	Lin-lee
Louvain	Loo-van
Luneville	Lun-veel
Le Quesnoy	Le-ken-wah
Liart	Lee-ahr
Longwy	Long-vee
Laon	Lah-ong
Le Nouvion	Luh-noo-veehng

<i>Name.</i>	<i>Pronunciation.</i>
Le Chesne	Luh-Shane
Leuze	Lez
Le Chatelet	Luh-Shatlay
Marseilles	Mar-say-yee
Malines	Maleen
Matigny	Ma-tinyee
Merville	Mer-veel
Morbecque	Mor-bek
Melincourt	Melan-coor
Moreuil	Mor-uh-ee
Mons	Mohngse
Morlancourt	Morlan-coor
Melicoeq	Mel-eeek
Marqueglise	Mark-aigleese
Massil	Mass-eel
Montcourt	Mohng-coor
Mulchy	Mul-shee
Meaux	Mo
Mezieres	Mez-eeair
Montdidier	Mohng-did-dyay
Maubeuge	Mo-buzh
Morisel	Mor-eesel
Muizon	Mwi-zohng
Meunier	Men-eeair
Main de Massiges	Man-duh-Masseezh
Marquivillers	Markey-veeyay
Mourmelon	Moor-melohng
Menin	Men-an
Montmirail	Mohng-mirah-ee
Montcornet	Mohng-cornay
Maizieres	May-zeeair
Mouzon	Moo-zohng
Montnedy	Mohng-maidy
Nampoel	Nam-poh-el
Neuilly	Nuh-yee
Norrent-Fontes	Norrong-fohnt
Namur	Na-muhr
Nieuport	New-pore
Nancy	Nong-see
Neufchateau	Nuf-shat-oh
Nomeny	No-menee

<i>Name.</i>	<i>Pronunciation.</i>
Noyon	Nwa-yong
Nancois	Nong-swa
Nivelles	Nee-vell
Oulchy	Oolshee
Olizy	Ul-easy
Pagny	Pah-nyee
Picardy	Pee-cardce
Passchendaele	Pass-ken-dahlay
Puisieux	Pwis-yuh
Pierrepont	Peeair-pohng
Pont Arey	Pohng-arsee
Pion	Pee-ohng
Peronne	Pay-ron
Pierrefonds	Peeair-fons
Pontruet	Pohn-rooeh
Pont a Mousson	Pohng-a-Moosohn
Pozieres	Poz-eeair
Proyart	Prwah-yar
Paliseul	Pal-ee-sull
Pierrefitte	Peeair-fit
Rheims	Ranse
Ribecourt	Reeb-coor
Ribemont	Reeb-mohng
Roulens	Roo-longse
Rebecq	Re-bek
Roisel	Rwa-zell
Roisieres	Rwaz-eeair
Ressons-sur-Matz	Ressohng-sur-mats
Roye	Rwa-ee
Ronssoy	Rohn-soye
Roubaix	Roo-bay
Rougemont	Roozh-mohng
Sailly	Sah-yee
Salins	Sal-an
Savieres	Sahvee-yair
Selency	Seh-lahnsee
Senlis	Son-lease
St. Pol	San-pul
St. Simon	San-Seemohng
Steenwoorde	Steen-wurde
St. Maur	San More

<i>Name.</i>	<i>Pronunciation.</i>
Soissons	Swa-sohng
St. Denis	San-denee
St. Die	San-decay
St. Gobain	San-Go-ban
St. Just-en-Chaussee	San-Zhost-en-Shossay
St. Laurent	San-lorong
St. Mihiel	San-Mee-el
St. Quentin	San-Kantan
St. Venant	San-Venong
Seicheprey	Saish-pray
Seringes	Ser-anzh
Sergy	Ser-zhee
St. Armand	Sant-or-mong
Toutencourt	Toot-oncoor
Tourcoing	Toor-kwan
Tirlemont	Teer-lemohng
Tresnes	Tren
Thiaucourt	Tee-oh-coor
Tilloy	Til-wah
Toul	Tool
Tracy	Trah-see
Tournai	Toor-nay
Tintigny	Tan-tinyee
Vaulere	Vo-clair
Vieux Berquin	Vyu-Berkan
Vitry	Vit-ree
Vermelles	Ver-mel
Voormezeele	Vor-mez-eele
Vaudelicourt	Vodel-icoor
Villeneuve	Veel-nuv
Ville-en-tourbe	Veel-ong-toorb
Villers-Bretonneux	Veeyay-Bretonnuh
Villers-Cotterets	Veeyay-Cutray
Vimy	Vee-mee
Vaux	Vo
Violaine	Vee-olain
Vincelles	Van-sell
Woevre	Wev
Ypres	Eep
Zeebrugge	Zee-brig-eh

ITALIAN NAMES

<i>Name.</i>	<i>Pronunciation.</i>
Adige	Ad-eezheh
Ampezzo	Am-petzo
Asiago	Ass-yahgo
Aviano	Av-yahnoh
Bassano	Bass-ahnoh
Belluno	Bell-unoh
Borgo	Bor-go
Brescia	Bres-chiah
Bribano	Bri-bahnoh
Caorle	Ka-orleh
Casarsa	Caz-ar-sah
Chioggia	Kio-gya
Cittadella	Chitta-della
Cittanuova	Chitta-nu-ohva
Cividale	Chiv-idahleh
Conegliano	Con-el-yahnoh
Gorizia	Goriz-eea
Feltre	Fell-treh
Isonzo	Eez-onzoh
Latisana	Lateez-ana
Legnago	Len-yago
Levico	Lee-veeco
Livenza	Lee-venza
Longarone	Long-arohneh
Meduno	Med-uno
Mestre	Mess-treh
Montebelluna	Monteh-bell-una
Palmanova	Palma-nohva
Parenzo	Parenz-oh
Perarolo	Pay-rah-rohlo
Peschiera	Pesh-yerah
Pirano	Peer-ahnoh
Piave	Pee-ah-veh
Pordenone	Por-denohneh
Primolano	Pree-mo-lahno
Salvore	Sallvoreh
St. Stefano	San-stef-ahno
St. Vito	San-veeto
S. Bonifacio	San-bonif-achio
S. Giorgio	San Georg-io

<i>Name.</i>	<i>Pronunciation.</i>
S. Martino	San-marteeno
Tagliamento	Tal-yamentoh
Treviso	Tre-veeso
Udine	Oo-deene
Umago	Om-ahgo
Venezia	Ven-zohneh
Vittorio	Vit-ohryoh

PALESTINE NAMES

Acre	Ah-kr
Armageddon	Ahr-mah-djeddon
Beisan	Bay-sahn
Es-Salt	Ehz-Sahlt
Hedjaz (Railway)	Hed-jazz
Jaffa	Jah-fah
Nazareth	Nah-zah-reth

BULGARIAN NAMES

Bazarli	Bah-zahr-lee
Cerna (River)	Tcher-nah
Demirkapu	Deh-meer-kapoo
Doiran	Doy-rah'n
Drenska	Drehn-skah
Gradsko	Grahd-sko
Istip	Ees-tip
Monastir	Mon-ah-steer
Prilep	Pree-lep
Furka	Foor-kah
Smokvitsa	Smoke-vee-tzah
Strumitza	Stroom-itzah
Vardar	Vahr-dahr

PENMANSHIP

J. E. HUTCHINGS, DENVER

POSITION OF THE BODY

Sit in the center of the seat, with body erect and close to the desk, but not against it. Turn body just a trifle to the left, so that right arm will have plenty of room on the desk. Place both feet flat upon the floor, keeping left foot a few inches to the left and in advance of right foot. Put both arms upon the desk, forming approximately right angles at elbows. Bend body forward slightly at hips, and allow the weight that rests upon the desk to be upon left arm so that right arm will be free and easy. Permit head to droop a trifle to secure a restful angle of vision. Relax the entire body. If the left arm is kept well upon the desk at all times, it will not only assist in forcing the shoulders to fall equally, keeping the body erect, but it will be convenient for holding and adjusting the paper. Eyes should be between ten and fourteen inches from the writing.

POSITION OF ARM, HAND AND PEN

The elbow of the right arm may extend off the desk about an inch, but the preferred position is to have the entire forearm rest its full weight on the desk, touching it at two places only; viz., the arm rest (writing muscle) and nail of little finger. Keep back of hand almost flat, so that penholder will be directed toward or over right shoulder. Allow no part of arm or hand to touch the paper or desk except at the points designated. If the wrist and fleshy part of hand are lifted clear of desk, the wrist muscles will soon be trained to hold that joint straight and firm, but not rigid. Close fingers against each other firmly and bend well under the hand. With the left hand take the penholder and place it in right hand between the thumb and second finger, allowing it to rest upon side of second finger nail. The inside of thumb and first finger should rest flat upon penholder in a loose manner. Holder should form an angle of about forty-five degrees, which will place it opposite or in rear of knuckle joint of first finger. Relax the entire body, especially the arm and hand, so that they will be free from any strain and remain in a loose-jointed condition at all times. Use only sufficient strength to keep the holder from falling out of the hand. See that both nibs of the pen rest evenly on the paper. It is most important that a beginner should watch the position of his hand. Other mistakes may be rectified gradually, but the posi-

tion of the hand must be established at once, if the pupil is to do good work.

POSITION OF PAPER

The sides of the paper should lie parallel with the right forearm. As the writing progresses down the page, move the paper upward, and not the right arm downward. The arm should rest at a point near the middle of the paper, laterally, but rather toward the right of the middle than toward the left. The right arm should lie with its full weight upon the paper, and the weight of the upper body should be placed on the left arm. Cleanliness of the paper should be preserved by using a blotter underneath the right hand. If the desk surface is not smooth, three or four sheets of paper should be kept under the sheet being written upon.

MOVEMENT

Muscular movement is produced by causing the arm to roll upon the large bunch of muscles of the forearm, located just forward from the elbow, where the arm rests upon the desk, with the nail of the little finger gliding upon the paper. The nail of the little finger should describe every movement the pen makes, and the motion of the pen should be governed exclusively by the arm. In all movement practice and in all written work the forearm should act as a unit. The propelling muscles are located in the shoulder, but the muscles in the skin of the forearm, at the arm rest, must stretch and contract as the movement is exercised. This stretching and contracting is of supreme importance in learning to write. Practising Exercise 1 will do that which cannot be accomplished in any other way. Rapid exercise of the rolling and propelling movement will perform a kneading process upon the skin muscles that will free them of all resisting qualities, and then develop the proper degree of elasticity and lightness. Improvement is always determined by the quality of the movement that is developed.

Without a practical means of execution, no style of writing can meet the demands of modern commercialism. As soon as a good position is understood, it is not difficult to develop an excellent movement. During the process of movement development, do not emphasize form. Master one subject at a time. Do not allow improper movement in any written work. Prohibit writing that cannot be supervised.

MATERIALS

Use pens. Discourage the use of pencils in any writing, and do not permit pupils to use fountain pens of any make. Medium-pointed pens are the best for teaching a free, elastic movement. Pupils are to supply themselves with blotters and pen-wipers. If pens are handled carefully, a pupil should not use more than one pen a week. Inkwells should be cleaned and filled twice a week.

COUNTING

Count, or mark time with an instrument, until a rapid and regular movement is mastered. This is applicable especially to the movement drills, and can be used advantageously in all writing at different times, throughout the text. Rhythm is of supreme importance. Rapid practice of the movement drills, using large forms, will soon destroy inept muscular and nervous substance, which will be replaced immediately by new substance that is adapted for pen-work.

FORM

As soon as movement is developed sufficiently, strive for form. Require every member of the class to qualify on each line as the lessons are covered. Do not permit pupils to fall behind in order to qualify. When a pupil fails to qualify on a lesson, he must do outside work until he does qualify, and not neglect the succeeding lessons. Keep the class together.

The capitals are evolved in order of principle and simplicity, as follows: *O, A, C, E, N, M, W, H, X, G, K, Z, V, U, Y, P, B, R, L, S, T, F, D, G, I, J*. The small letters are similarly evolved, as follows: *t, i, u, w, e, n, m, x, v, y, z, o, c, a, d, g, q, r, s, j, p, l, b, h, k, f*.

Make a close study of every letter before presenting it. Get clearly in mind what should be the relative widths of parts and lengths and where should be slight or intense curves. Observe angles and turns. It is lack of definiteness in this respect that is the stumbling-block of many teachers.

Capitals are practiced at a full space high to avoid too much mental effort in regard to form during the period of movement development. Often a beginner will apply the movement to large forms when he would persistently use his fingers if he were compelled to write smaller. As soon as the movement is controlled sufficiently, reduce the height of capitals to three-fourths of a

space. Small *t*, *d* and *p* are one-half space high. Extended loops, *l*, *b*, *h*, *k* and *f*, are the height of capitals. The minimum letters are one-fourth space high. Small *r* and *s* are a trifle higher than the minimum letters.

In making the capitals, use a rapid, dashy, elastic movement. Try to produce the finest quality of hair lines. Speed is necessary. Roll off pages without restriction in the movement. Do not pay much attention to form until the movement becomes automatic. Practice the small letters rapidly, but use a more restricted motion. Concentrate your power on each letter. Do not spin off small letters in rapid succession, as if you were practicing movement drills. The movement should be slightly restricted, but not drawn. There is a certain measure and exactness in making small letters that is unknown to capitals. Make each letter as nearly perfect as possible, without reference to the one that follows. Look at the copy frequently. Always have in mind a very definite aim. Never practice for general results.

Slant is natural. While the approximate slant given in the text should be emphasized, the course is planned so that everyone will develop his individual slant.

Throughout the entire course specific movement drills should be given frequently.

Post qualified work of pupils in the room once a week.

At first, practice paper should be ruled with vertical lines dividing the paper into halves and fourths. Use a pencil and ruler for the purpose.

As soon as a pupil advances sufficiently, he should practice without the vertical lines.

Learn to write half-way across the page without lifting the pen.

In writing, the speed is three down strokes a second. Movement drills are written more rapidly. To determine how many times a letter can be made in a minute, divide three times sixty by the number of counts in that letter.

The entire class should write on the same lesson at the same time. Permit no one to go ahead or to fall behind.

This does not mean, of course, that in the recitation one pupil must stop at the end of a line and sit idle until a slow pupil catches up with the class.

Individual instruction is necessary.

Walk about the room continually with an alertness that pro-

hibits poor position, improper movement, slow speed, etc. Require every pupil to be busy every minute of the time. Criticise judiciously and commend at every opportunity. Pupils usually do as poorly as the teacher permits and as well as she demands.

Before beginning the penmanship course, require every pupil to submit a specimen of his writing, as follows: "This is a specimen of my business writing at this time. _____, Colo., September _____, 19_____" Signed. Compare this specimen with a similar specimen at the end of the year. Specimens should be filed by the teacher.

ANALYSIS

Ex. 1: The compact oval is made by a vibratory movement which is explained under "Movement." The first practice of this oval is for the purpose of stretching and contracting the muscles in the skin of the forearm, so as to secure a large range of movement. As this is being accomplished, a tearing-down and rebuilding process will take place in the muscles. For some students it requires many weeks of persistent practice on movement drills to develop sufficient muscular and nervous adaptability for good execution. Practice the oval at the rate of 200 revolutions a minute. The retraced oval at the beginning of the line is made by eight revolutions. The width of the oval is equal to two-thirds of its height. By continuing the retraced oval, gradually moving to the right until seventy-two revolutions are made, a compact oval is almost completed, as shown in the second exercise on the line. The oval made in the direction that the hands of a clock move is called the indirect oval, and the one made in the opposite direction is called the direct oval. Change directions after each line, so that the practice will be about equally divided. Rapid practice is especially conducive to stimulating thought and concentration. Hold the pen lightly, and make the holder slant so as to form an angle of about forty-five degrees. Keep both nibs of pen resting evenly upon the paper, and think intently upon the work. Make the exercises compact and regular, without a drawn or blurred appearance. Strive for a fine hair line.

Ex. 2: Apply instructions regarding the oval and practice the retraced oval given at the beginning of the line. Fill several pages of this exercise before beginning the *O*. Make twenty-five to the minute, each being retraced eight times. The *O* has the same slant and height as the oval, and the horizontal curve that

forms the finishing loop is begun in the center of the letter. Watch the slant, roundness, close at the top, and do not make the finishing stroke too long. The letter is made in two counts. Come to a stop at the end of the first count until the letter is understood and the movement controlled. As soon as possible, make the letter without a check in the motion, and write at the rate of seventy-five to the minute, with no pause between letters. Persevere until a decided improvement is shown.

Ex. 3: *A* is similar to *O*. Study the analysis closely. It is made in two counts. The first part consists of a downward curve and upward straight line. The curve is pronounced. The second part is a left curve extending just a trifle below the line. Notice the slant and width. Practice liberally on the *A* exercise before beginning the *A*. Stop at the end of each count and close at top as explained for *O*. Write seventy to the minute.

Ex. 4: *C* is another oval-like letter. Practice the exercise freely before beginning the letter. It is begun with a small oval and finished with a larger one. Observe the slant of the letter. Make the entire letter without pausing, and do not check the motion between letters. It is made in two counts. Write seventy-five to the minute. Study and practice.

Ex. 5: The two parts of *E* are portions of an oval. The upper part is just one-half as large as the lower one. Make each part rounding, and slanting the same as an oval. The small loop connecting the parts of the letter lies in the direction of an imaginary line that is perpendicular to the main slant of the letter. *E* is more difficult than the other capitals given thus far, and more practice will be necessary to master it. It has the same slant as *O*, *A*, *C*, and is made in two counts. After practicing the exercise until it can be made easily and well, begin the letter. Make seventy-five to the minute. Fill many pages.

Ex. 6: The motto of the penmanship student should be "Review." It is the constantly repeated effort to improve that counts. In Exercise Six are all of the capitals thus far studied. Review each one separately at first, until it can be made well and uniformly, and then practice *O*, *A*, *C*, *E*, in groups. Try to make each letter perfectly, as though you were preparing it for engraving. Strive especially for uniformity in slant, height, width and spacing. Remember the speed. Write four groups on a line at the rate of four lines to the minute.

Ex. 7: This exercise introduces and analyzes *t*, the first

lower-case letter. Notice how it is evolved from the straight line movement drill. The beginning and ending strokes are pronounced right curves, and the down stroke is straight. The down stroke retraces half the height of the letter. It is made with a quick up-and-down movement, with a slight pause on the base line. Make the letter one space high at first. Practice it singly until it is understood and the movement controlled; and then join in groups of eight, at the rate of twenty groups to the minute. As soon as satisfactory proficiency has been reached, reduce the height to one-half space.

Ex. 8: The *i* resembles *t* in reduced form. The down stroke does not retrace. Write with a rapid movement, pausing on the base line. The height is one-fourth space. Watch slant and spacing. After the letter has been practiced singly, join it in groups of three, and later join sixteen on a line without lifting the pen, at the rate of 180 a minute. Dot carefully.

Ex. 9: *u* is composed of double *i*. The width of the letter is equal to its height. Observe parallelism in the straight lines and also in the curves. Make a strong finish to all letters. Practice singly, and then join in groups as explained for *i*, at the rate of from ninety to one hundred a minute. Remember that the nail of the little finger inscribes every letter the pen makes. Be sure that the forearm acts as a unit. Keep the top of the *u* sharp and the base rounding. Exercise care, freedom and grace.

Ex. 10: The *w* is begun like *u*, and finished with a short, horizontal curve. Start the finishing stroke with a dot, and slightly retrace at the height of the letter. Follow previous instructions. Write sixteen on a line at the rate of eighty a minute.

Ex. 11: Small *e* is made like *i*, excepting a loop is formed. Curve the down stroke as little as possible. Theoretically, *e* has a straight down stroke the same as *i*, but it is not objectionable to make a slight curve. Instructions relative to *i* apply to *e*.

Ex. 12: *n* is directly evolved from the preceding exercise. It has three rounding turns and one sharp turn. Down strokes are straight and parallel. Write in groups of eight at the rate of fifty a minute. Use the wide-spacing principle, writing six on a line without lifting the pen.

Ex. 13: *m* is analyzed, studied and practiced in accordance with instructions given for *n*.

t, *i*, *u*, *w*, *e*, *n*, *m*, should be reviewed thoroughly before proceeding farther. Join them, writing crosswise on the page of other

²³ *o o o o* ²³ *W W* ²⁴ *Wan* ²⁴ *W*
²⁵ *W* ²⁵ *Wat* ²⁶ *W X* ²⁶ *Xen* ²⁶ *2* ²⁶ *2* ²⁶ *Quit*
²⁷ *W X* ²⁷ *Xite* ²⁸ *Y* ²⁸ *Z* ²⁹ *Zone* - ²⁹ *cc*

30
cccc come - ova aaaaa

31 32
ana add addⁿ x ggag

34
35
34
35

a p q quater 95 v Vein V U

36 37
Una V of Y. You - - - - -

38
ss miss 1 f f f f f

40 3 11
1 p p p e e p 1 p p p p p p p p

42
1 B B Bone 1 R R R R R Rome

44 45

U lll llllllll l - b bbbbbb

writing, thus utilizing worthless paper, and securing another valuable drill.

Ex. 14: Letters in these words have been analyzed. Do not join *O* and *A* to the small letters. Write four lines in a minute. Fill many pages practicing this line.

Ex. 15: Join the capitals to the small letters. Follow previous instructions relative to height, width and slant of each letter, and spacings.

It is presumed that students who have followed instructions diligently are now able to apply the movement properly in all of their writing. During the remainder of the course instructions will be confined to a brief analysis of each form as it is presented.

Ex. 16: Small *x* is composed of the last part of *n*, with a straight line intersecting the down stroke, as shown on the second line. Be careful to make the straight line intersect properly.

Ex. 17: Small *v* is composed of the first part of *n* and the finishing stroke in *w*.

Ex. 18: The initial stroke in *N* is used in eleven capital letters. The oval is quite rounding and is outside of the hook formed by the curve and down stroke. The up stroke in the second part of the letter is a trifle lower than the first part, and retraced very little. Both down strokes are almost straight and parallel. It is the same in width as the small *n*. Write forty-five to the minute.

Ex. 19: *M* is similar to *N*, with a third part added. The height gradually slopes to the right. Write thirty to the minute.

M and *N* may be joined to any small letter. From the standpoint of speed they should be joined, but oftentimes it is desirable to disconnect them.

Ex. 20: The first part of *y* is similar to the first part of *v*, with a lower loop added. The loop is full, the down stroke is rather straight, and the crossing is on the base line.

Ex. 21: The small *z* is directly evolved from *y*. Make the first down stroke straight and slanting the same as the second down stroke.

Ex. 22: Begin small *o* on the line of writing. It is a miniature oval finished like small *w*. Close at the top and finish with a retraced compound curve.

Ex. 23: The beginning stroke of *W* is like the first stroke of *N* and *M*. The second part consists of an upward right curve, downward straight line, and upward left curve. The last stroke is retraced just a trifle. Do not retrace in the second and third strokes.

Ex. 24: *H* is begun like *W* and finished with a downward left curve and small loop. The small loop is made by a horizontal curve the height of small letters. *H* should be joined to small letters.

Ex. 25: *X* is similar to *H*. The second down stroke touches the first part at half the height of the letter. Make a slight pause on the base line.

Ex. 26: *Q* begins like *X* and ends with a compound curve. The loop it forms with the down stroke is horizontal, and rests upon the base line.

Ex. 27: The second stroke in *K* is compound, starting up and leftward, with a pronounced left curve. The tiny loop should tie with the first down stroke. Make the finishing curve narrow.

Ex. 28: *Z* ends like small *z*, excepting that it forms a small loop on the base line.

Ex. 29: Small *c* begins and ends like *n*. The down stroke begins with a dot, and is curved like the down stroke in *o*. Come to a stop on the base line.

Ex. 30: Small *a* is begun and finished like *c*. The second upward and second downward strokes are straight. The letter should be equal in size to *o*.

Ex. 31: Small *d* is exactly like *a*, with a short loop on its top.

Ex. 32: Small *g* is also like *a*, with an extended loop underneath.

Ex. 33: Small *q* begins like *a* and ends with a lower direct loop. The loop is the same in size as *g*, and closes on the base line.

Ex. 34: The first part of *V* is like *Z*, and it is finished with a compound upward curve. Keep the finishing stroke a trifle lower than the first part.

Ex. 35: *U* starts like *V* and finishes like *A*.

Ex. 36: *Y* begins like *V* and ends like small *y*.

Ex. 37: Small *r* begins and ends like *i*. Make a pause at the shoulder of the letter. It is one-fourth higher than the other minimum letters.

Ex. 38: Small *s* begins and ends like *r*, and is the same in height. The down stroke is a short compound curve. *r* and *s* are peculiar letters, and require special study.

Ex. 39: *j* begins like *i* and ends like *g*.

Ex. 40: *p* begins like *t* and ends like the first part of an inverted *d*. Close the finishing stroke on the base line.

46 47
l n h h h h h h h l r k h h h h h h
48 49
l f f f f f f f l a k e b a l k h a l f
50 51
f i l l S^r L L a d y S S S a l e
52 53
S J T T a m e S T T T T a i l
54
L e e S a n d e r s T i l l i e F i l l m o r e
55 56 57
D O D D o l l l b b S a u l b l l
58 59
I n d i a J J J J o h n A n n o u n c e
60
B o u n d a r y C i n n a m o n D o m i n i o n
61
E n c o m i u m F e m e n i n e G r i n d i n g
62
H a u n t i n g I l l u m i n e J o i n i n g s
63
K n e a d i n g L u m i n o u s M e n u e n d s
64
N o m i n e e s O b e d i e n t P o i n t e r s

65

Quantity Ruminous Scarcity

66

Terminus Untimely Velocity

67

Whatever Xanthous Youthful

Zodiacal Laconian Jeannette

68

Familiarize yourselves with

69

alkaline axillary cajolery

70

equipage teaching learning

71

Free movement and simple forms

72

A B C D E F G H I J K L M

73

N O P Q R S T U V W X Y Z

74

11 22 33 44 55 66 77 88 99 00 % % % %

75

Business men want good writing.

Ex. 41: *P* begins like the straight line exercise and ends with an oval at the top.

Ex. 42: *B* begins like *P*. The two ellipses are the same in size. The small loop connecting the ellipses is directed at about right angles with the main slant of the letter. The finished stroke makes a sharp angle with the second ellipse.

Ex. 43: *R* starts like *P*. The last stroke begins with a small loop that touches the first down stroke, and finishes like *A*.

Ex. 44: The *l* loop begins with a pronounced upward curve and downward straight line, and ends like *i*. Make the loop full and slanting properly.

Ex. 45: *b* begins like *l* and finishes like *w*.

Ex. 46: Small *h* begins like *l* and ends like *n*.

Ex. 47: *k* begins like *l* and ends with a short right curve and combined straight line and left curve. Study the analysis of the finishing part.

Ex. 48: *f* begins like *l* and ends like *q*. Penmen are free to state that the loops are more difficult than all other small letters combined. Practice the joining of *l*, *b*, *h*, *k*, *f*, until they can be made well and rapidly.

Ex. 49: These words are for extended practice on the loops. Watch height, width, slant and spacing.

Ex. 50: *L* begins with a dot and a slanting, downward, compound curve, and ends like *Q*. It is more difficult than any other capital, and usually requires a great deal of study and practice. The letter is made in two styles. The second style is begun with a horizontal curve as an initial stroke.

Ex. 51: *S* starts like the first up stroke in *l* and has a downward compound curve like *L*, and ends with a horizontal curve that forms a sharp angle with the downward stroke.

Ex. 52: *T* begins like the latter part of *S*. The stem hook is made by a small loop inside of a right horizontal curve which is placed directly over the main stem.

Ex. 53: *F* is made exactly like *T*, with the closing and crossing added.

Ex. 54: The compound curves *L*, *S* and *T*, *F*, should be strong and uniform. Study height, width, slant and spacing of all letters in these words.

Ex. 55: *D* begins with downward compound curve like the latter part of *S*, forms a small horizontal curve on the base line,

and ends similarly to *O*. Close the letter at the top, and see to it that the toe and heel both rest on the base line.

Ex. 56: *G* is made like *S*, with the downward stroke crossing horizontally to the right and forming a sharp angle at one-half the height of the letter. It has the same relative width as *H*.

Ex. 57: *I* begins with an indirect upward curve, forms a loop with a downward straight line, and ends like *G*. In order to have a natural slant in the letter, it is necessary to make the first upward curve almost vertical.

Ex. 58: *J* begins like *I* and finishes like *Y*. The lower loop is about half as wide as the upper one.

Ex. 59: Beginning with this exercise and extending to Exercise 72, words containing eight letters each are given, in which all of the capital letters are reviewed. Practice three words on a line. Study and be cautious about slant, width, height and spacings. Uniformity in writing is of vital importance.

Ex. 72: Exercises 59 to 68 gave word practice in which the capital letters were reviewed, and also included nearly all of the small letters. Exercises 68 to 72 are for additional word and sentence practice, and give a review of the remainder of the small letters.

Ex. 73: Fill a page practicing each capital, separately at first. If you are not able to make good capitals, cover many pages in this manner. Practice unceasingly on the entire alphabet as it appears in the text. Work rapidly. If any part of the alphabet is especially difficult, give it an unusual amount of study and practice.

Ex. 74: Business men want good, legible figures. Oftentimes it is necessary to write them rapidly. 4, 7 and 9 are the only figures that cut the line. 2 is a miniature of *Q*. 3 resembles a reversed *E*. The finishing of 5 is like the finishing of 3. The downward stroke in 6 is almost straight. The first stroke in 7 is a compound curve. 8 resembles an inverted *S*. 9 begins like *a* and ends with a downward straight line. Study these figures and practice them with the muscular movement until they can be made satisfactorily.

The Syllabus for Teachers of Penmanship prepared by J. E. Hutchinsonson would be invaluable to the teachers of the state in carrying out this course. Each pupil should have upon his desk J. E. Hutchinsonson's Progressive Lessons in Business Writing. Sold by Herrick Book Company.

SUGGESTIONS FOR MODIFYING THE WORK IN LANGUAGE AND GRAMMAR TO CONFORM WITH WAR-TIME CONDITIONS.

MARTHA W. DORSEY, COLORADO SPRINGS HIGH SCHOOL.

Never before have we had a better opportunity to emphasize the value of correct oral expression. If we are proud of our flag we should also be proud of the language of the Declaration of Independence which brought forth the flag. The Frenchman, who has proved himself a great soldier, is proud to speak good French. No pupils of any nation write as good prose as French pupils. Can we not take as much pride in our speech and in our writing as the French do in theirs? Clear and well enunciated speech is an evidence of training and of patriotism. We Americans are coming into close relations with other nations; France has sent some of her students to Colorado colleges to learn about us; let us speak our language with pride. And let us sit and stand with the posture of free people, not with the slouch or the slump of the weak or the unfit. A careless American cannot be a loyal American, not 100 per cent loyal. These ideas, expressed in language adapted to the various grades, should be emphasized and reiterated throughout the eight grades.

In all the grades the Thanksgiving and the Christmas language work should keep before the pupils the people of the other lands who have suffered so greatly from the war, and the people of this land who have already lost relatives in the camp or battle. As soon as they are old enough the pupils should be urged to write to the soldiers they know. It is almost impossible to send gifts to soldiers overseas, but we can send letters, and they are quite as welcome. The pupil gets better drill in letter writing, for he is writing to an actual person in whom he is interested and is also performing patriotic service. One man sent a letter overseas addressed to The Soldier Who Gets No Letter in This Mail. That letter was passed on and on to soldiers who had no other letter. Possibly some children will care to try that plan. They may also care to write to children of their own age in the countries of our Allies. They can do that through the various relief associations for the countries. For instance, the Italian War Relief has an office at 405 Boylston Street, Boston, Mass., and possibly a branch in Denver. French Relief has a branch in Denver. Others can be found if desired.

In connection with Washington's and Lincoln's birthdays, we should keep before the children why America was founded, why

the Revolution and the Civil War were fought, and why we are fighting now. Make clear that we have no land and no money to gain in this war, but that we are spending our money and fighting the war that all other nations may be free, that no nation may rob another.

In connection with Discovery Day and the life of Columbus, make vivid the wonderful work Italy has done and is doing in this war, and the terrible suffering she has undergone. What she has done is not so well known to the usual American as it should be.

These suggestions are repeated in the outline for some of the grades, but should be borne in mind by all.

The work as already outlined gives abundant opportunity for oral and written composition on all phases of conservation, thrift, war gardens, war farms, etc.—material too valuable both for patriotism and for composition to be willingly neglected.

These suggestions are to be used with the course of study already adopted. Some months are not taken up in detail, as the course plainly suggests the work, or the general suggestions can be adapted to the month. The regular course will be followed with modifications for emphasizing war and other patriotic material. The public school exists to develop American citizens.

FIRST YEAR

First Month. Talk with children about home life, etc.—as it stands in the Course of Study, page 267. Also compare the home life of children in this country with that of children in Belgium, France, Italy, where war has been so terribly at work. Show what the American soldiers have done for these children. In many cities and towns there will be children of foreign birth or parentage who can bring first-hand accounts of home life in other lands.

In the Contributors' Club of the Atlantic Monthly for September is a little poem well adapted to this study.

Second Month. STUDY OF AUTUMN FRUIT.—The opportunity to teach food conservation so that even these little children can both spread and practice the gospel. Their talks can be about what they themselves have done or can see to do. The saving of fruit pits and nut shells also included. Other points in the course of study as usual.

Third Month. PREPARATION FOR WINTER.—The need of fuel conservation—coal, gas and electricity. We must each save that enough coal may be had for trains, ships, cantonments, and our Allies.

Fourth Month. WORK BASED ON CHRISTMAS.—Why there are to be no extra clerks this year. What can be done for other lands. What can be done for children of soldiers in this country, especially for soldiers' orphans. Christmas in France last year for the children near the American camps and billets.

Other parts in course of study.

Fifth Month. In talks on care of the body, show the necessity of children being good soldiers every day in America, walking, standing, and sitting properly, and keeping well. A sick soldier means extra work for some one else.

Sixth Month. TALKS ON WASHINGTON AND LINCOLN.—Add also something of Pershing, Lafayette, Joffre, Foch, Haig. Many children can easily contribute bits of information. We are no longer a nation off to ourselves. Lafayette's descendants in the present war.

Seventh Month. The school garden and the home garden are again elements in patriotic food conservation.

SECOND YEAR

In connection with the study of Hiawatha, as outlined in the course of study, show at the suitable stages of the story the part the Indians are playing in the present war, buying bonds, speaking among their own race to tell them of war conditions and duties, and the number of Indians now in actual service in our army. Geronimo's grandson is an American soldier.

In the third and the fourth month, let the Thanksgiving and the Christmas stories and conversations bear upon present war conditions in this country and in the countries of the Allies. Make definite the value of war relief contributions and help for the Red Cross. Remember any soldiers' orphans.

Fifth Month. In connection with Eskimo life, show how the people of Alaska came promptly to the front in the Fourth Liberty Loan.

Sixth Month. "The Little Book of the Flag," by Eva March Tappan (Houghton, Mifflin Company), will be of great help in the work outlined.

Stories of Washington and Lincoln—see also First Year.

Seventh Month. Help to win the war by garden.

Eighth Month. Show how birds help to win the war by destroying enemies of crops.

THIRD YEAR

Follow the general suggestions for the first and the second year, naturally making the subjects somewhat more comprehensive. At Thanksgiving and Christmas remember especially those who have suffered from the war.

"I Am an American," by Sara Cone Bryant (Houghton, Mifflin Company), can well be used from third to sixth grade inclusive for work among the pupils. "The Little Book of the Flag," mentioned in second year, sixth month, will also be found useful in more than one grade.

In teaching letter writing have as many as possible write and send a letter to some soldier whom they know, especially soldiers overseas. This will be a stimulus for the pupil and a bit of home for the soldier.

FOURTH YEAR

In dictation make use of some of the many fine sentences brought out by various phases of the war and patriotism in general.

In geography show something of the barbaric way in which Germany has destroyed forests, orchards, mines, and factories when she has been forced to retreat.

In history review briefly August and September, 1914, when the Belgians held back the great German army long enough for France to gather some forces, and when France turned Germany back within fourteen miles of Paris at the first battle of the Marne and saved Paris, the Allies, and the United States.

In the study of wheat and the manufacture of flour, pay attention also to wheat flour substitutes and to wheat flour conservation.

Second Month. In lessons on Columbus call attention to Italy's great part in the present war, her breaking away from Germany and joining the Allies. By means of map show how easily the Central Powers could bring troops into France if Italy were with them. Call attention to the marvelous mountain fighting the Italians have done in this war.

In the third and the fourth month have as many letters as possible go to soldiers whom the pupils know, either in cantonments or overseas. In "Christmas in other lands" show child life there since 1914.

Fifth Month. In correlating geography and grammar in lessons concerning winter, show how the winter affects the armies in Europe. What would be the present effect for our forces if winter could be mild and dry in northern Europe?

Sixth Month. In study of animals have study of the value of dogs in present war—a subject the pupils are interested in and on which they can get information. Red Cross dogs, rescue dogs, etc. Use of white mice in sanitary department of army; use of canary birds in mining and countermining. The Blue Cross organization.

WASHINGTON AND LINCOLN.—America was founded by people who wished to be free to worship as they pleased. The Revolution was fought that we might say how we are to be governed. Now we are fighting that *every nation* may say how it is to be governed. Make clear that America has only that in this war,—no gain of land or money, but freedom of the seas and freedom of government for all.

Seventh Month. In connection with “Paul Revere’s Ride,” use the prose account of “A Race for Liberty,” by George D. Varney (“Strange Stories of the Revolution,” Harper & Brothers), reprinted also in “Stories of Patriotism,” by Houghton, Mifflin Company.

SUGAR CONSERVATION.—Bring home to students.

Eighth Month. TREES AND FORESTS.—Work of the American forestry engineers in the army in Europe.

FIFTH YEAR

First Month. In connection with “Barbara Fritchie” use “The Little Book of the Flag” (Houghton, Mifflin Company) for the valuable information therein.

Second Month. Birds as helpers in producing crops. Canary birds in warfare for gases, etc., as suggested in fourth year. From United States Government get leaflets on birds as economic forces.

Third Month. Business letter applying for canteen service; offering services to Red Cross to collect salvage

COMPOSITION.—Army quarters in winter. Life of soldiers during winter. Condition of country in Flanders and northern France in winter.

Fourth Month. In addition to or in place of letters suggested, write a letter to a friend asking help for war orphans in Belgium, France, or Italy. Make the appeal convincing, so that the writer will get something. Write a letter of sympathetic friendliness to some of the school children in the war-scourged lands. (For any pupil who wishes to do this addresses can be secured from the war relief associations in America of the various countries, or the letters could be sent to the different cities that have been freed by the Allied armies.)

Fifth Month. In connection with the story of William Penn, have the pupils learn of the large work in war relief, both in this country and in Europe, that the Quakers are now doing.

Sixth Month. Besides the early history of Colorado, have compositions also on Colorado's part in the present war,—soldiers, doctors, nurses, bonds, war saving stamps, Red Cross work, etc. How can the pupils help?

In the following months it will not be difficult to have the compositions in great part on some phase of the war: individual instances of heroism; German barbarity in needless destruction of life and property; the decoration for valor given by Britain, France, United States.

In addition to "Old Ironsides" and "The Flag Goes By," use "Liberty Enlightening the World," by Henry Van Dyke ("A Treasury of War Poetry," Houghton, Mifflin Company).

SIXTH YEAR

Have some of the composition work throughout the year on what the war has taught the pupils in patriotism, in thrift, in conservation, in sympathy for other nations, in geography, in history, in the matter of inventions, in self-restraint, etc.

See general suggestions for Thanksgiving and Christmas composition work.

Sixth Month. In the study of Washington, use may well be made of Eva March Tappan's "A Winter at Valley Forge," in "Stories of Patriotism," by Houghton, Mifflin Company. In the same book, "Little Athens' Message" will form a basis for excellent oral and written composition on civic patriotism.

The story of Nathan Hale entitled "The Martyr Patriot," by Ellis ("Stories of Patriotism," Houghton, Mifflin Company), will also form a basis for patriotic teaching and composition.

SEVENTH YEAR

Practically no composition is outlined for this year, though obviously the pupils are more capable of such work than during the preceding years. Also a little literature is stretched a long way. Doubtless the teachers have other helps provided for making the year fruitful; the outline as it stands seems barren for pupils who are naturally becoming more awake to life in general and to their surroundings.

SUGGESTIONS.—Condense the time allotted for Polonius' Advice to Laertes—which a seventh grade pupil can easily manage—and to the other poems, and add some of the more recent poems and prose. *The Recessional* in its implication will be a little more difficult for the students to get, but is not at all too difficult, and with sympathetic suggestion from the teacher will fit admirably in their present interests.

1. Give also "Langemark at Ypres," by Wilfred Campbell.
2. "The Admiral's Ghost," Alfred Noyes.
3. "British Merchant Service," C. Fox Smith.
4. "A Message to Gareia," Elbert Hubbard.
5. "O Captain! My Captain," Walt Whitman.

Numbers 1 and 3 may be found in "A Treasury of War Poetry," Houghton, Mifflin Company; 4 and 5, "The Patriotic Reader," Houghton, Mifflin Company.

In connection with United States history, make use of the life and deeds of General Putnam's descendant, the famous aviator of the present war.

The Outlook, the Literary Digest, the Independent, and other publications give much material, in addition to news articles, concerning various phases of the war: letters from soldiers, brief accounts of persons or special deeds, etc., all of which make excellent material for composition, especially for informal oral composition in which voice, vocabulary, posture, etc., may be improved—often by indirect criticism.

EIGHTH YEAR

For the composition work mentioned at the beginning of the outline for this year, the pupils will more likely than not choose some phase of war for discussion. Some will be glad to give reports—not stereotyped—of war books they have read; some can write sympathetically of some of the war poetry, telling why they liked given selections, and quoting some lines they have liked best. Many can give accounts of personal efforts in war conservation and war gardening and farming. Some will be interested in their reading of the shipbuilding work of the Government; of the airplane manufacture; of the work of the aviators in the war. Some can tell of the cantonments (many have perhaps visited one); some of the problems of feeding the army. Definite ways of being a patriot at home. (One high school boy said that as a matter of patriotism he ought to change to older clothes when he went home from school,

that he might save his clothes and help his father save money.) The right attitude toward conservation of flour, meat, sugar, fats, fuel,—a very vital form of service.

THE VALUE OF THE RIGHT KIND OF ATHLETICS.—Compare the Duke of Wellington's statement that the battle of Waterloo was won on the cricket fields of England. Note also James Norman Hall's "The Cricketers of Flanders," in "A Treasury of War Poetry," Houghton, Mifflin Company. In connection with the latter the pupils are doubtless familiar with Hall's work as an aviator—his serious wound, his recovery, his final accident that landed him in a German prison camp. He has written two war books above the average—"Kitchener's Mob" being one, and "High Adventure" the other.

Some poems that will prove interesting to the pupils are:

"Abraham Lincoln Walks at Midnight," by Vachel Lindsay; "To the Belgians," by Laurence Binyon; "The Hell-Gate of Soissons," by Herbert Kaufman—all in "A Treasury of War Poetry"; and "In Flanders Fields," and the reply, written, respectively, by a Canadian and an American soldier.

Much use can be made of "Our Country's Call to Service," published by Scott, Foresman & Company—quantity price 9 cents each.

The section of "Stories of Patriotism" (Houghton, Mifflin Company) devoted to "Songs and Heroes of Our Allies" will be valuable material. Perhaps new ideas and ideals will be gained from "Scum o' the Earth," by Robert Haven Schauffler ("Treasury of War Poetry").

Other kinds of composition work will naturally suggest themselves from the work already in the outline.

In the letter writing have pupils write letters showing what a good investment Liberty Bonds and War Saving Stamps are.

AUTOCRACY VS. DEMOCRACY

MATERIAL SUPPLIED BY UNITED STATES GOVERNMENT

Suggestions for Theme Writing

THE GERMAN GOVERNMENT

The German Empire was founded by the princes, the rulers of the various states in the confederation.

THE AMERICAN GOVERNMENT

The American Republic was founded by the representative men chosen in each state by the people.

QUESTIONS AND COMMENTS

Do you prefer princes or the common people as makers of government?

THE GERMAN GOVERNMENT

The King of Prussia is, *BECAUSE* of that fact, the Emperor of Germany. No other king or prince in Germany can be Emperor even though the people wish him.

THE AMERICAN GOVERNMENT

The President of the United States is *ANY* eligible citizen of the states whom the people choose as their ruler.

QUESTIONS AND COMMENTS

Do you wish to be helpless and voiceless as to the chief ruler of your country?

THE GERMAN GOVERNMENT

Laws in Germany are *APPARENTLY* made by the Bundesrat and the Reichstag.

THE AMERICAN GOVERNMENT

Laws for the United States *ARE* made by the Senate and the House of Representatives.

QUESTIONS AND COMMENTS

Before you accept the *SEEMING* likeness in the American and German governments note below the make-up and real power of each.

THE GERMAN GOVERNMENT

The Bundesrat is made up of delegates *APPOINTED* by the rulers, princes and kings of the twenty-five states of the Empire.

THE AMERICAN GOVERNMENT

The United States Senate is made up of men, two from each state, chosen by the *PEOPLE* of each state.

QUESTIONS AND COMMENTS

Notice that *KINGS* are represented in the German upper house, while in the United States it is the *PEOPLE* of the state.

THE GERMAN GOVERNMENT

War is declared in Germany by the Emperor with the consent of the Bundesrat, whose members are only agents and tools of princes.

THE AMERICAN GOVERNMENT

War is declared in America by both houses of Congress. The President can only *RECOMMEND* it. The Congress is elected by the people, and seeks to do its will.

QUESTIONS AND COMMENTS

In all reason, is aggressive war more likely to be planned by 61 men responsible to only 25 men, or by 528 men responsible to 100 millions of people?

THE GERMAN GOVERNMENT

If the war is *DEFENSIVE*, the Emperor alone may declare it. He decides whether it is defensive or offensive. The Hohenzollerns always decide that their wars are defensive.

THE AMERICAN GOVERNMENT

Even defensive war by the United States must be voted by both houses of Congress. No ambitious individual, as President, can plunge the nation into war.

QUESTIONS AND COMMENTS

This contrast between autocracy and democracy is very significant. One wickedly ambitious man can conceal his predatory plans, but 500 men cannot. Democracy prepares for war in the open, autocracy in secret.

THE GERMAN GOVERNMENT

The Reichstag (whose consent to a war is *NOT* required) is elected by the people, but some members are elected by a few thousand voters, others by hundreds of thousands. A Berlin deputy represents 125,000 voters, each deputy from East Prussia, home of the Junkers, represents 24,000. Thus the Junkers have more influence.

THE AMERICAN GOVERNMENT

The members of the United States House of Representatives (whose consent *IS* required for war) are chosen by proportional representation, so that every 212,000 inhabitants have their repre-

sentatives. No privileged section of the United States has a larger representation than some other section with the same number of inhabitants.

QUESTIONS AND COMMENTS

In the United States we reapportion our representation every ten years. In Germany the apportionment made forty-six years ago has been kept. The Kaiser and the Junker class desire this because it keeps large progressive cities like Berlin, with its thousands of workmen, from having their proper influence.

THE GERMAN GOVERNMENT

The Reichstag has been called a "hall of echoes," because it can *TALK*, but has little power to *GOVERN*. It cannot make or unmake ministries. The minister does the will of the Kaiser, not the Reichstag's will. It votes *NEW* taxes, but *OLD* tax laws can be continued and the taxes collected without their consent. No law that is passes is effective until the Bundesrat, sitting in secret and doing the will of the Kaiser and other German princes, gives its approval.

THE AMERICAN GOVERNMENT

The American House of Representatives has a really important part in government. It cannot make laws without the agreement of the Senate and the President, but they too are elected by the people and are influenced by them. No old taxes can be continued without their consent, and by refusal of money they can make the President helpless. He cannot, like the German Kaiser, go his way without their approval.

QUESTIONS AND COMMENTS

Parliaments will not control in Germany; the civil power will not be above the military; the Kaiser will not cease to talk of power conferred upon him by Divine will *UNTIL* the German Reichstag gets as much power as the American Congress, or the British House of Commons. That they can get only with the downfall of rule by "Divine right."

ARITHMETIC

ELEANOR DAVIDSON AND M. E. EAGLETON

The public school is for social efficiency and it is the duty of the teacher to keep this fact constantly in mind, to the end that the study of each subject shall pass over into action. The three R's will always be the basis of school work, since they supply fundamental needs of human contact, language first with its symbolic printed form for interchange of thought, and number second for expediting exchange and barter of needed commodities.

The chief value of any subject, whether it be conventional as in the case of spelling, inspirational as in the study of history, or utilitarian and disciplinarian as in the case of arithmetic, should suggest the method of presentation.

Arithmetic is the science of number, and the processes of arithmetic are short-cuts to counting and measuring. With these points in mind the teacher should bring every power of her mind to the vitalizing of the essential in arithmetic, while she minimizes or eliminates the non-essential.

The study of arithmetic should establish ideals of accuracy, neatness, close thinking, logical procedure and ideals of conquest. There is value in a hard task mastered. Cambridge, England, gives a very stiff course in mathematics and sends her men into the world thinking they can tackle and master any situation. This ideal of conquest fixed in a child's mind, his battles are half won.

The teaching of arithmetic covers three rather distinct phases:

1. The development of number concepts, that is of the group idea—recognizing 2 objects or 3 or 5.

2. Making number formulas automatic, uniform response to uniform stimulus: $4 + 3 = 7$, $14 - 8 = 6$, $7 \times 9 = 63$.

3. Development of arithmetic initiative.

The first two phases are covered in the lower grades, the third is in the province of the upper grades.

FIRST GRADE

1. Children should, by the end of the first year, be able to count and to read and write numbers to 100.

2. They should know the combinations and separations to 10.

3. They should be able to read time from the clock face, and to appreciate the relative value of the dollar, half-dollar and quarter.

When the six-year-old child enters school he has had considerable number experience. He has counted in his games, has handled money and knows something of the cost of clothing and food; in an elementary way he has reckoned time, distance, weight and other measurements. Moreover, he seems instinctively interested in number, so far at any rate as it intimately touches his daily life.

Discover the extent of this knowledge and the activities about which the number interest centers and from this point develop the primary arithmetic.

Begin with counting; this is fundamental. Count windows, pictures on walls, desks in the room, girls, boys, total children, vacant seats. Pace distances, length and width of room, and of school yard. Allow tall and short child to pace same distance; the answers differing, have the performance repeated; some child will discover the reason—the longer the pace the fewer the paces.

Tell of old-time method of measuring; so many days' journey, so many moons hence, so many paces long, so many hands high.

Correlate number interest with construction work—stick laying, seed design, paper folding and cutting, cardboard carpentry—with classroom games and daily activities.

Combinations should be developed concretely, then drilled upon until these number formulae become automatic. Drill exercises should be brief, lively and frequent. A good drill concentrates the attention of the entire class all the time, hence care should be taken that interest does not flag or run into strain or fatigue.

Utilize the child's keenest number interest. If he is earning and saving to buy Thrift or War Saving Stamps, he can be led to reckon up for this purpose far beyond what he could comprehend in abstract number or in concrete work not within the range of his immediate interest. Rub in with drill and review work, not with nagging.

During the second semester short written lessons may be given. From the first require a simple, uniform arrangement for all paper work. Develop each written lesson at the board in bold hand, then have it reproduced in large form on paper, neatly written.

SECOND GRADE

1. Review first grade work.
2. Children should learn to count, read and write numbers to 1,000. Count by 2's, 5's and 10's to 100.
3. Teach the combinations and separations to 20.

4. Give the multiplication tables through 5×12 .

5. Have children handle pint and quart, yard and foot measures.

6. Develop $\frac{1}{4}$ and $\frac{3}{4}$, $\frac{1}{3}$ and $\frac{2}{3}$ through use of the foot ruler.

Keep the number work well within the child's experience and so within his interest and comprehension.

The work outlined in the primary or elementary arithmetic of any good series will give abundant suggestions as to available material and the methods of using it, but the teacher must add to these suggestions her own personality and wisdom and adapt the whole to the child's immediate environment, need or interest.

Such books as the Wentworth-Smith "Work and Play with Numbers" are sympathetic and helpful.

Any group of children engaged in helping to "win the war," or to feed a starving world through food conservation, will be interested in "Food Problems" (Ginn & Co., 25 cents), when the material has been adapted by a clever teacher to the local food situation.

Give many problems relating to Thrift and War Saving Stamps.

Develop concretely combinations and separations to 20. Make these number formulae automatic by inspired drill work.

Give such lessons as the following:

$4 + 3 = 7$	$7 - 3 = 4$	$7 - 4 = 3$
$14 + 3 = 17$	$17 - 3 = 14$	$17 - 4 = 13$
$24 + 3 = 27$	$27 - 3 = 24$	$27 - 4 = 23$
$34 + 3 = 37$	$37 - 3 = 34$	$37 - 4 = 33$

In this way the child will get necessary drill work and will gain an insight into the fact that one thing learned may apply in many directions.

Bring the table work to as nearly an automatic basis as possible. When a subject proves too difficult for a class leave it for a time and take up something easier or more interesting. Come back to the difficulty when teacher and class are refreshed and strengthened for the combat.

Use flash cards, number games, every device you can find for making drill work interesting.

Review the week's work on Friday, the month's work during the fourth week, and the year's work the last month.

THIRD GRADE

1. Review first and second grade work.
2. Teach the forty-five combinations in addition and their corresponding separations.
3. Complete multiplication tables through 12×12 .
4. Give addition in columns of two figures, of three figures, and teach the reading of numbers to 100,000.
5. Develop subtraction.
6. Deal with very simple fractions.
7. Measure by inch, foot and yard.

In this grade the child first uses the text-book. The teacher should know thoroughly the text-book to be used, should know its strength and its weakness and how she can connect the book material with the child's daily and future interest, activities and needs.

"Food Problems" (Ginn & Co.) furnishes much new and up-to-date material for supplementary work in third and fourth grades.

A good text is important, but a good teacher is imperative where the best results are to be obtained.

Third grade arithmetic is often considered very difficult. In developing new processes it is well to follow this line of procedure:

1. Pass by very gradual steps from very simple to more complicated stages; drill much on each stage and introduce but one new feature each time.
2. Let each added complexity form a point of departure for stimulating the problem interest.
3. Get the correct process before the class the first time and make clear before allowing the class to try.
4. Have much practice before undertaking the next step; use concrete problems also.

Illustration:

$$\begin{array}{r} 51 \\ -17 \\ \hline 34 \end{array}$$

7 from 1 I cannot take, so I shall add 10 to 1, making 11.

7 from 11 leaves 4. When I add 10 above I add 1 to this next lower number. 2 from 5 leaves 3. 17 from 51 leaves 34.

Without asking questions demonstrate twenty or more problems, the children joining in as the process becomes clear, after which the class may pass to the board for work.

Review on the last day of the week, the last week of the month, and the last month of the year.

FOURTH GRADE

1. Review addition, subtraction and multiplication.

2. Develop division.

3. Give simple work in fractions.

Go more deeply into "Food Problems" (Ginn & Co.).

5. Work for speed and accuracy. Encourage competition in class and also effort to better one's own record.

6. Read and write numbers to 1,000,000. Count by 9's, 10's, 11's, 12's.

7. Develop square inch, square foot and square yard.

DIVISION.—Read third grade course for method of procedure in development of new process.

a. Short division process:

$$\begin{array}{r} 2 \overline{)6804} \\ 3402 \end{array}$$

b. Long division form of short division, 2—9 for divisor.

$$\begin{array}{r} 4 \overline{)1384(346} \\ 12 \\ \hline 18 \\ 16 \\ \hline 24 \\ 24 \end{array}$$

c. Two-place divisor:

$$\begin{array}{r} 12 \overline{)276(23} \\ 24 \\ \hline 36 \\ 36 \\ \hline \end{array}$$

$$\begin{array}{r} 25 \overline{)875(35} \\ 75 \\ \hline 125 \\ 125 \\ \hline \end{array}$$

d. Any divisor.

This is the grade in which the child should become well grounded in the four fundamental operations. To this end the

teacher should bend her every energy and resourcefulness. If the child can add, subtract, multiply and divide reasonably large numbers quickly and accurately with good will and enthusiasm, then is the teacher's work well done, and future grade work will be built upon a firm foundation.

FIFTH YEAR

FUNDAMENTAL OPERATIONS.—Rapid review of fourth year's work, placing emphasis on problems in long division. In this work have pupils divide and test accuracy by multiplication. Teach pupils to talk arithmetical language.

To prove division, multiply the quotient by the divisor and add the remainder, the result will equal the dividend. In testing problems always encourage the pupil to make definite statements.

COMMON FRACTIONS.—Develop the idea of a fraction. Have plenty of drill work on writing and reading fractions. Mixed numbers should be added as follows:

$$4\frac{3}{4} = 4\frac{9}{12}$$

$$2\frac{1}{2} = 2\frac{6}{12}$$

$$3\frac{2}{3} = 3\frac{8}{12}$$

$$\text{Sum} = 10\frac{11}{12}$$

Subtraction of mixed numbers:

$$10\frac{2}{3} = 10\frac{8}{12}$$

$$6\frac{3}{4} = 6\frac{9}{12}$$

$$\text{Difference} = 3\frac{11}{12}$$

In teaching multiplication and its reverse process, division, the procedure should be (1) multiplying or dividing a fraction by a whole number, (2) a whole number by a fraction, (3) a fraction by a fraction, (4) a mixed number by a mixed number.

METHODS IN DIVISION.

$$\frac{2}{5} \div \frac{3}{4} = \frac{8}{20} \div \frac{15}{20} = \frac{8}{15}$$

$$\frac{2}{3} \div \frac{3}{4} = 8 \div 15 = \frac{8}{15}$$

$$\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{4}{3} = \frac{8}{15}$$

We invert the divisor to see how many times it is contained in one :

$$1 = \frac{4}{4} \quad \frac{4}{4} \div \frac{3}{4} = \frac{4}{3} \quad \frac{2}{5} \times \frac{4}{3} = \frac{8}{15}$$

At the end of the fifth year the pupil should be able to write and read numbers to 1,000,000, do addition, subtraction, multiplication, and division of fractions and mixed numbers. He should also be taught cancellation :

$$\begin{array}{r} 2 \qquad \qquad 5 \\ 14 \times 9 \times 7 \times 25 \\ \hline 7 \times 35 \times 45 \\ \qquad 5 \qquad 9 \end{array} = 2.$$

SIXTH YEAR

Test the four fundamental operations for accuracy and speed. Review multiplication and division of common fractions.

DECIMALS.—Reading and writing decimals. The pupil should know that thousandths is the third decimal order, millionths the sixth, etc. The pupil should be taught to begin at the decimal point to write a decimal. If asked to write three hundred forty-six millionths, the pupil should at once think that since millionths is the sixth order, and since there are three digits in three hundred forty-six, he must insert three zeroes; he therefore begins at the decimal point and writes three zeroes, the figures 3, 4, 6. In this way he writes decimal fractions from left to right just as he writes integers. Read pure decimals as whole numbers, then state the name of the order of the figure at the right.

To read mixed decimals: Read the integral part, then the decimal part, joining the two parts by *and*. 36.215 is read, 36 and 215 thousandths. .00165 is read, one hundred sixty-five hundred thousandths.

MULTIPLICATION AND DIVISION OF DECIMALS.

4.685	4.685
.436	.436
1.8740	28110
.14055	14055
.028110	18740
2.042660	2.042660

a. Divide 96.8 by .32.

$$\begin{array}{r}
 .32)96.80(302.5 \\
 \underline{96} \\
 80 \\
 \underline{64} \\
 160 \\
 \underline{160} \\
 0
 \end{array}$$

b. Divide 32.6 by 2.5.

$$\begin{array}{r}
 2.5)32.6(13.04 \\
 \underline{25} \\
 76 \\
 \underline{75} \\
 100 \\
 \underline{100} \\
 0
 \end{array}$$

DENOMINATE NUMBER.—Write tables, as:

4	8	2	320	5½	3	12
Bu.	pk.	qt.	pt.	Mi.	rd.	yd. ft. in.

Change from higher to lower denominations.

Change from lower to higher denominations.

Solve enough problems from text in addition, subtraction, multiplication, and division of denominate numbers to make sure of principles and accurate results.

PERCENTAGE.—Percentage should follow decimals. No new mathematical principles are involved in any of its applications. All the pupil has to learn is the new language. When a pupil knows $\frac{1}{4}$ or .25 he knows 25%, all but the name. The work of the teacher is to teach the pupil to think familiar ideas in a new language. The terms base, rate, and percentage correspond to multiplicand, multiplier, and product in multiplication. Per cent means out of every 100. 1 per cent or 1% means 1 out of every 100. $1 \div 100 = .01 = 1\%$.

Find 8% of 300. $8\% = .08$; $300 \times .08 = 24$.Find what per cent 24 is of 300. $24 \div 300 = .08 = 8\%$.24 is 8% of what number? $24 \div .08 = 300$.

In this grade only the simplest forms of percentage are given.

A boy save one thrift stamp each day for the year 1918, how many dollars does he save each month and how many dollars does he save during the year?

Problems like the one above should be given the pupils for supplementary work.

For supplementary problems get a food problem arithmetic.

SEVENTH YEAR

PERCENTAGE.—The problems used in percentage should be in harmony with actual business.

Give exercises in finding base, rate, and percentage by the following comparison :

IN MULTIPLICATION.

1. Multiplicand \times multiplier = product.
2. Product \div multiplier = multiplicand.
3. Product \div multiplicand = multiplier.

IN PERCENTAGE.

1. Base \times rate = percentage.
2. Percentage \div rate = base.
3. Percentage \div base = rate.

\$500, Multiplicand
6, Multiplier

\$3000, Product
\$500, Base
6% = .06, Rate

\$30.00, Percentage

Erase one term and show how it can be found again.

In percentage two terms must be given to find the third.

Change % to decimal and common fraction :

$$6\% = .06 = 6/100 = 3/50.$$

$$6\frac{1}{4}\% = .06\frac{1}{4} = \frac{6\frac{1}{4}}{100} = \frac{25}{400} = 1/16.$$

$$3\frac{3}{8}\% = .003\frac{3}{8} = \frac{3\frac{3}{8}}{100} = 3\frac{3}{800}.$$

$$3\frac{3}{8}\% = .003\frac{3}{8} = .00375.$$

$$265\% = 2.65 = 265/100 = 2^{13}/20.$$

The pupil should see that the reduction of a per cent to a decimal involves simply the omitting of the per cent sign and using two decimal places. $6\% = .06$.

Reverse: $.06 = 6\%$. $\frac{1}{2}\% = .001\frac{1}{2}$.

$$\frac{1}{3} = .33\frac{1}{3} = 33\frac{1}{3}\%.$$

$$\frac{1}{8} = .12\frac{1}{2} = 12\frac{1}{2}\%.$$

After the principles of percentage have been thoroughly taught practical application to problems should be given.

1. Decimal method.

- a. Find 8% of 250. $8\% = .08$; $250 \times .08 = 20$.
- b. 20 is 8% of what number? $20 \div .08 = 250$.
- c. 20 is what per cent of 250? $20 \div 250 = .08 = 8\%$.

2. Fractional method.

- a. Find 8% of 250. $8\% = .08 = 8/100 = 2/25$; $2/25$ of 250 = 20.
- b. 20 is 8% of what number? $8\% = 2/25$; $20 \div 2/25 = 500 \div 2 = 250$.
- c. 20 is what per cent of 250? $20 \div 250 = 20/250 = 2/25$; $2/25$ of 100% = 8%.

3. Analysis method.

- a. Find 8% of 250. 8% of 250 = 20.
- b. 20 is 8% of what number? 8% of the number = 20;
1% of the number = 2.5; 100% of the number = 250.
- c. 20 is what per cent of 250? 1% of 250 = 2.5; $20 \div 2.5 = 8$; 8%.

A man sold two lots for \$150 each. He gained 25% on the first and lost 25% on the second. Find the entire gain or loss by the transaction.

Let pupil use any one of the methods given.

SOLUTION.—100% of cost of first lot + 25% of cost of first lot = 125% of cost of first lot; 125% of cost of first lot = \$150; 1% of cost of first lot = \$1.20; 100% of cost of first lot = \$120; 100% of cost of second lot — 25% of cost of second lot = 75% of cost second lot; 75% of cost of second lot = \$150; 1% of cost second lot = \$2; 100% of cost of second lot = \$200; \$120 + \$200 = \$320, cost of both lots; \$150 + \$150 = \$300, selling price of both lots; $\$320 - \$300 = \$20$, loss; $\$20 \div \$320 = .061\frac{1}{4} = 6\frac{1}{4}\%$, loss, ans.

In all percentage problems the pupil should always keep in mind “per cent of what.”

The work of the text-book should be supplemented freely by the teacher.

Insist on much work being done mentally. Of course all problems are mental problems. There can be no other kind. These are either oral or written. A great many mental oral problems should be given.

I sold $\frac{3}{5}$ of an article for what $\frac{3}{4}$ of the whole article cost. Find the rate per cent of gain or loss.

Since $\frac{3}{5}$ of the article sold for $\frac{3}{4}$ of the cost of the article, $\frac{1}{5}$ of the article sold for $\frac{1}{3}$ of $\frac{3}{4}$, or $\frac{1}{4}$ of the cost of the whole; $\frac{5}{5}$ of the cost of the article equals 5 times $\frac{1}{4}$ of the cost of the whole, or $\frac{5}{4}$ of the cost of the whole. $\frac{5}{4}$ of the cost of the whole — $\frac{4}{4}$ of the cost of the whole = $\frac{1}{4}$ of the cost of the whole, gain; $\frac{1}{4}$ of the cost of the whole \div $\frac{4}{4}$ of the cost of the whole = $\frac{1}{4}$; $\frac{1}{4}$ of 100% = 25%, gain, ans.

Or $\frac{3}{5}$ s. p. = $\frac{3}{4}$ c.;
 $\frac{1}{5}$ s. p. = $\frac{1}{4}$ c.;
 $\frac{5}{5}$ s. p. = $\frac{5}{4}$ c.;
 $\frac{5}{4}$ c. — $\frac{4}{4}$ c. = $\frac{1}{4}$ c.;
 $\frac{1}{4}$ c. \div $\frac{4}{4}$ c. = $\frac{1}{4}$;
 $\frac{1}{4}$ of 100% = 25%, gain, ans.

After teaching all the applications of percentage teach at least one good method of interest. The year, month, and day method is good.

Find the simple interest on \$360 for 3 yr. 4 mo. 9 da. at 7%.

\$360
 .07

Int. for 1 yr. = \$25.20; 3 yr. = $3 \times \$25.20 = \75.60

Int. for 1 mo. = \$2.10; 4 mo. = $4 \times \$2.10 = \8.40

Int. for 1 da. = \$.07; 9 da. = $9 \times \$.07 = \$.63$

Int. for 3 yr. 4 mo. 9 da. = \$84.63

Pupils should keep a neat note book in which they may record important truths and principles during the year.

Study a good list of miscellaneous problems involving the year's work.

EIGHTH YEAR

RATIO AND PROPORTION AND PARTNERSHIP.

One number may be compared with another in two ways; how much greater or less, or how many times one number equals another. The ratio of 8 to 4 is 2.

Proportions are written $::$ or $=$.

$$5 : 10 :: 6 : 12 \text{ or } 5 : 10 = 6 : 12.$$

$$5/10 = 6/12.$$

Dividend \div Divisor = Quotient.

Antecedent : Consequent = Ratio.

$$20 \div 4 = 5.$$

$$20 : 4 = 5.$$

$$3 : () :: 7 : 21 \text{ or } 3 : () = 7 : 21.$$

$$7 : 21 = 7/21 = 1/3; 3 : () = 1/3.$$

$$3 \div 1/3 = 9 \div 1 = 9.$$

A and B together invest \$1500, and A's investment is to B's as 2 is to 3. How much does each invest?

$$2 + 3 = 5; 2/5 \text{ of } \$1500 = \$600, \text{ A's}; 3/5 \text{ of } \$1500 = \$900, \text{ B's.}$$

If 14 men can dig a trench 8 feet wide, 10 feet deep, and 660 feet long in 22 days, working 8 hours a day, how many days would be required for 16 men to dig a trench 10 feet wide, 8 feet deep, and 480 feet long, working 7 hours a day?

14 men	16 men
8 feet wide	10 feet wide
10 feet deep	8 feet deep
660 feet long	480 feet long
22 days	()
8 hours	7 hours

$$16 : 14 \quad . \quad .$$

$$8 : 10$$

$$10 : 8 \quad . \quad . \quad 22 \text{ days} : (16 \text{ days})$$

$$660 : 480$$

$$7 : 8$$

$$\begin{array}{r} 22 \text{ days} \times \frac{2}{14} \times \frac{16}{10} \times \frac{8}{8} \times \frac{480}{660} \times \frac{8}{7} \\ \hline \frac{16 \times 8 \times 10 \times 660 \times 7}{8 \times 30} = 16 \text{ days.} \end{array}$$

Compound proportion problems are usually omitted in the arithmetics, but if they are given the above solution is given as a suggestion for solving such problems. Proportion can be used to advantage in some of the applications of arithmetic, especially in the solution of problems relating to similar figures.

POWERS AND ROOTS.—Explain the terms: exponent, power, root, square, cube.

EXTRACTING ROOTS.—Square and cube.

Use formula, $(t + u)^2 = t^2 + 2tu + u^2 = t^2 + (2t + u)u$.

$$(t + u)^2 = t^2 + 2tu + u^2.$$

$$(20 + 6)^2 = 20 \times 20 + 2 \times 20 \times 6 + 6 \times 6 = 676.$$

$$\begin{array}{r} \begin{array}{r} \text{. . .} \\ 60516 \end{array} (246 \\ \hline t^2 = 4 \\ \hline \begin{array}{r|l} 2t = 40 & 205 \\ u = 4 & 176 \\ \hline 44 & 2916 \\ \hline 2t = 480 & \\ u = 6 & 2916 \\ \hline 486 & \end{array} \end{array}$$

$$\begin{array}{r} \text{Or} \quad \begin{array}{r} \text{. . .} \\ 60516 \end{array} (246 \\ \hline 4 \\ \hline 44 \mid \begin{array}{l} 205 \\ 176 \end{array} \\ \hline 486 \mid \begin{array}{l} 2916 \\ 2916 \end{array} \end{array}$$

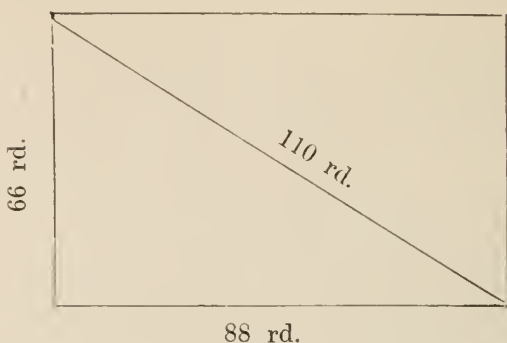
$$(t + u)^3 = t^3 + 3t^2u + 3tu^2 + u^3 = t^3 + (3t^2 + 3tu + u^2)u.$$

$$(t + u)^3 = t^3 + 3t^2u + 3tu^2 + u^3.$$

$$\begin{aligned} (20 + 6)^3 &= 20 \times 20 \times 20 + 3 \times 20 \times 20 \times 6 + \\ &3 \times 20 \times 6 \times 6 + 6 \times 6 \times 6 = 8000 + 7200 + 2160 + 216 = \\ &17576. \end{aligned}$$

$$\begin{array}{r} \begin{array}{r} \text{. . .} \\ 14172488 \end{array} (242 \\ \hline t^3 = 8 \\ \hline \begin{array}{r|l} 3t^2 = 1200 & 6172 \\ 3tu = 240 & \\ u^2 = 16 & 5824 \\ \hline 1456 & 348488 \\ \hline 3t^2 = 172800 & \\ 3tu = 1440 & \\ u^2 = 4 & 348488 \\ \hline 174244 & \end{array} \end{array}$$

What is saved by following the diagonal instead of the sides, 66 rods and 88 rods, of a rectangle?



$$\sqrt{(66 \text{ rd.})^2 + (88 \text{ rd.})^2} = 110 \text{ rd.}; 66 \text{ rd.} + 88 \text{ rd.} = 154 \text{ rd.}; 154 \text{ rd.} - 110 \text{ rd.} = 44 \text{ rd., ans.}$$

MENSURATION.—Surface and solid contents of prisms, pyramids, cylinders, cones, and spheres. Area of rectangle, rhomboid, triangle, circle, trapezoid, hexagon, octagon, etc., solving many problems to illustrate.

SIMILAR SURFACES AND SOLIDS.

Observe that similar figures have exactly the same shape but differ in size.

Similar surfaces are to each other as the squares of their like dimensions.

Similar solids are to each other as the cubes of their like dimensions.

A circular field, 40 rods in diameter, is worth \$300, what is a circular field 60 rods in diameter worth?

$$40^2 : 60^2 :: \$300 : (\$675).$$

The weights of two balls are 135 pounds and 625 pounds; the diameter of the second is $17\frac{1}{2}$ in.; find the diameter of the first.

$$\sqrt[3]{625} : \sqrt[3]{135} :: 17\frac{1}{2} \text{ in.} : (\quad).$$

$$\sqrt[3]{125} : \sqrt[3]{27} :: 17\frac{1}{2} \text{ in.} : (\quad).$$

$$5 : 3 :: 17\frac{1}{2} \text{ in.} : (10\frac{1}{2} \text{ in.}).$$

Select practical problems for oral drill. Pupils should be encouraged to make up problems. These should be solved by the other members of the class as well as by the pupil who makes them up. For example: A boy at the age of 16 became addicted to the use of tobacco; he only used 10 cents' worth per day; how much money did the filthy habit cost him per year? If instead of paying out his money for tobacco and thus not only wasting his money but injuring his health, he had saved the money, how much would he have saved by the time he was 25 years of age?

Study and solve a good list of miscellaneous problems.

Have general review of the seventh and eighth years' work.

RECEIVED

NOV 09 1999

STATE PUBLICATIONS
Colorado State Library

